DOCUMENT RESUME

ED 032 987

RC 003 744

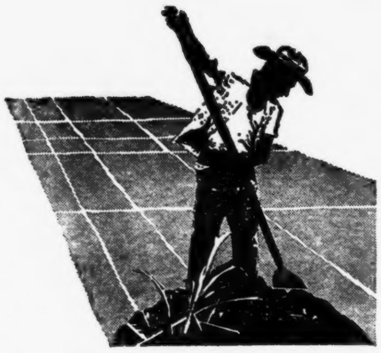
By-Hill, George W.; Gollas, Manuel
The Minifundia Economy and Society of the Guatemalan Highland Indian.
Spons Agency-Wisconsin Univ., Madison. Land Tenure Center.
Report No-RP-30
Pub Date Jul 68
Note-92p.
EDRS Price MF-$0.50 HC-$4.70
Descriptors-*Agricultural Production, *American Indians, Economically Disadvantaged, Family (Sociological Unit), Farmers, *Illiteracy, Interviews, *Latin American Culture, Living Standards, Migration Patterns, Rural Economics, *Rural Environment, Rural Population, Social Characteristics, Social Environment, Tables (Data)
Identifiers-*Guatemala, Mayans

This study of the Minifundia society in the Guatemalan Highlands was intended to describe and analyze the social and economic complex within which these Mayan Indians lived and carried on their system of traditional agriculture. A random sample of 348 families were interviewed and results were reported. According to the survey the average household contained 5 members who provided the main labor force for the family farm. Almost 95 percent of the farmers claimed to own all or part of their land. Income from farming was low, and farmers supplemented their earnings either by engaging in various business ventures or by obtaining agricultural or industrial employment. The survey indicated that 62 percent of the farmers interviewed were illiterate, and 16 percent of those who were literate had never received any formal education. Only 26 percent of the children older than 7 years were attending school, while 54 percent had never enrolled in school and 29 percent had dropped out after enrollment. Tables are used extensively to present data resulting from the study. (TL)

ED032987

RECEIVED
OCT 13 1969
NMSU
E.R.I.C.

A Research Paper



LAND TENURE CENTER

University of Wisconsin, Madison, Wisconsin 53706

RC003744

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

All views, interpretations, recommendations, and conclusions expressed in this paper are those of the authors, and not necessarily those of the Land Tenure Center or of the supporting or cooperating institutions.

July 1968 RP No. 30

THE MINIFUNDIA ECONOMY AND SOCIETY OF THE GUATEMALAN HIGHLAND INDIAN

By

George W. Hill and Manuel Gollas*

---

*George W. Hill, a rural sociologist, is currently working with Louis Berger, Inc. in Brazil. Manuel Gollas is a graduate student in agricultural economics at the University of Wisconsin.

TABLE OF CONTENTS

Page

Preface i

Chapter I. Introduction 1

Chapter II. The Population Resource 8

Chapter III. The Land Base 23

Chapter IV. The Highlands Milpa 32

Chapter V. Manpower and Technology 42

Chapter VI. Sources of Income 56

Chapter VII. Standards of Living 62

Chapter VIII. Education 70

Chapter IX. Summary and Conclusions 80

LIST OF TABLES

1. Rural and Urban Population Change, Guatemala, 1950 to 1964 9

2. Total Population of Sample Families, By Five-Year Age Groups and Sex 10

3. Families Classified According to Number of Persons in Family 15

4. Families With Household Heads Over 40 Years of Age, Classified According to Number of Children Who Had Died... 16

5. Civil Status of Heads of Families, Classified By Age 17

6. Present Place of Residence of Heads of Families, By Department 19

7. Measure of Mobility of Children and Siblings of Head of Family 22

8. Land Concentration in Guatemala, By Size of Holdings, 1950 24

Page

9. Land Concentration in Guatemalan Highlands By Size of Holdings, 1950 25

10. Sample Farms Classified by Total Farm Area and Cultivated Area 26

11. Distribution of Sample Farms Cultivated, According to Departments and Area Cultivated 28

12. Average Area Per Farm, By Class of Land Use 28

13. Manner in Which Land Was Acquired 29

14. Tenure Status of Sample Families 30

15. Principal Crops Cultivated, Distribution by Farms 37

16. Area Cultivated (hectares) and Yield (quintals) of Principal Crops 38

17. Average Value per Finca of Land, Buildings, Livestock and Equipment 40

18. Livestock Population on Survey Farms 41

19. Composition of Family Labor Force Employment on the Home Farm 43

20. Average Man-Months of Labor of the Operator and Other Family Workers in Production of Principal Crops by Size of Cultivated Area 44

21. Average Man-Months of Labor of the Operator and Other Family Workers in Production of Principal Crops by Departments 46

22. Milpa Productivity (Maize) With and Without Hired Labor 47

23. Regression Coefficients, Average and Marginal Productivities and Related Statistics of the Estimated Production Functions of Farmers Who Hire Labor and of Those Who Do Not Hire Labor 49

24. Response of Corn and Wheat to Fertilizer Applications .. 51

25. Average Value (Quetzals) per Finca of Gross Annual Production Classified According to Area Cultivated (Hectares) 57

26. Value of Annual Gross Production Sold per Finca (Quetzals) 57

Page

27. Annual Family Incomes of Migratory and Non-Migratory Farmers in their Home Communities 58

28. Comparison of Total Incomes for Migrants and Non-Migrants 61

29. Average Annual Outlay per Family on Principal Expenditure Categories 63

30. Some Selected Items of Family Levels of Living 65-66

31. Some Measures of Communications Facilities and Community and Church Responsibilities of Family Heads ... 67

32. Languages Spoken Outside of Home by Heads of Families and Wives, by Tribal Origins 71

33. Education Level of Male Heads of Households and Spouses.. 72

34. Educational Attainment of Parents Compared With Offspring, 17 Years and Over 74

35. Educational Status of Children by Sex, Age and Highest Grade Attained 76

36. Percentage of Literates in Various Categories of the Sample Population 77

37. Farms Classified by Area Cultivated and Value of Output.. 82

38. Selected Characteristics of Four Sub-Groups of the Sample Population 83

Figure 1. Distribution of Sample Population According to Age and Sex 11

Figure 2. Infant Deaths per Live Births 14

Preface

This paper is a preliminary report of a research project undertaken in 1964-65 by the University of San Carlos and the University of Wisconsin. This study of the minifundia economy and society in the Guatemalan Highlands was the first cooperative research project undertaken by the two universities. The analysis is still in progress and is being completed by Manuel Gollas, now a Rockefeller scholar at the University of Wisconsin. In the meantime a second cooperative study by Lester Schmid on the Role of Migratory Labor in the Economic Development of Guatemala (Ph.D. thesis, Wisconsin, 1967) has been completed.* It was both an outgrowth of and in part based upon this first study. It may be useful for the understanding of the present report to indicate the orientation of this initial cooperative research program.

A study of the Highland minifundia was first suggested by Mr. Rafael Piedra-Santa (now Dean of the School of Economics), then Director of the Instituto de Investigaciones Económicas y Sociales and leader of this project for the University of San Carlos.

The inquiry took shape around a few general objectives. a) The basic purpose was to establish a somewhat detailed picture of the nature of the system of economy and rural society which is currently operative in a number of highland areas. This area is a region of high population density. In terms of contemporary discussions of economic development, the Highland region has some of the characteristics of an area with "unlimited supplies of labor," to advert to the famous phrase of Arthur Lewis. b) It was hoped that this initial study would provide a better understanding of the real income and the real reservation wage of the "surplus" population in the Highland area. The anticipation was that from such a base, it would be possible to better understand c) the nature and significance of the movement of migratory farm labor between the Highland regions and the large scale commercial agriculture, as studied by Schmid, and to develop an understanding of the movement to the areas of new colonization, especially on the Atlantic slope. In this latter respect it was anticipated that a better understanding of the traditional "subsistence" economies of the Highland Indians would be helpful in planning colonization projects in the lower eastern regions; presumably, the farming abilities of prospective colonists are shaped by the farming practices of their home communities.

*LTC Research Paper No. 22.

The design and conduct of a research project, as here reported, are achieved only by the participation and collaboration of many different persons. The major part of the funds for this project was provided by a research contact between the University of Wisconsin, administered through the Land Tenure Center, and the Agency for International Development. The planning of this project was discussed at length with representatives of the U.S.AID mission to Guatemala, especially with Mr. Leonard Rhodes, then agricultural economist for the mission, as well as with leaders in several of the ministries and agencies of the Government of Guatemala. However, ultimate and sole responsibility for the research effort was assumed by the cooperating universities -- in keeping with the long traditions of intellectual independence of both.

The final revisions and editing of the manuscript owe much to Russell Cheetham, a research assistant in the Department of Agricultural Economics at the University of Wisconsin, and to Dr. Lester Schmid of the Universities of San Carlos and Wisconsin. Professor Ronald Clark, now with the Land Tenure Center in Bolivia, shared in the early planning and execution of this study. Professor K. H. Parsons has provided guidance in the general design and conduct of the research, in the editing of this manuscript and in the coordination of this project with closely related research undertaken in four Central American countries.

K.H.P.

I. INTRODUCTION

The general purpose of this study is to describe and analyze the social and economic nature of the minifundia system of the Guatemalan Highlands. The study is intended to contribute to the understanding of the social and economic complex within which the Mayan Indian carries on his system of traditional agriculture, so as to provide a basis for development policies appropriate to the alleviation of the poverty which all previous studies of the area have reported.

The Highlands, as here defined, include all the lands that lie at altitudes ranging from one thousand to three thousand meters in the seven departments of Chimaltenango, Quiché, Totonicapán, Huehuetenango, Quezaltenango, San Marcos, and Sololá. The Highlands is the most densely populated region of Guatemala with a population density of 178.1 inhabitants per square mile, compared to 109.2 for the entire country (or 155.3 for all Guatemala if the sparsely settled department of Petén is excluded). The Highland region accounts for 36 percent of the population of Guatemala.

In general, the Highlands has a temperate climate, which in the highest zones becomes relatively cold between December and February. Like the remainder of the country, it has two distinct seasons of about equal length. The wet season (winter) lasts from May until November; the dry season (summer) occurs during the remainder of the year. Winter is usually broken by one and sometimes two brief dry respites, colloquially known as *veranillo*, or little summer, but more correctly, *canicula*, which coincides with the "dog days" of mid-August in the temperate zone.

There is little level land in the mountainous terrain so most of the crops are planted on the slopes, some at extremely precipitous angles. The fields are usually divided into strips, separated by narrow margins marking individual holdings. Much of this land has been under cultivation for many centuries.

From a cultural viewpoint, the homogeneity of the region is readily observable. All of the inhabitants are descendants of the Mayan Indians. Most people still converse in one of the many Mayan dialects, and the women, particularly, dress in traditional costumes. With few exceptions these people follow planting and cultivating practices handed down through many generations.

In an economic and social sense, the region is equally homogeneous. Poverty is the general rule. The few *centavos* that the Indian makes when he is able to find work away from home are needed to buy more corn. Corn is the mainstay of his diet, but his farm is not large enough to provide for his sustenance. The rate of illiteracy is overwhelming: two-thirds of the heads of families in our study can neither read nor write. The population of the area has little voice or influence in the government of the country, which in true Latin tradition "is a country governed by the written law."[1] (*Guatemala es un país de derecho escrito.*) However, the sheer numbers of the Indians have made it impossible for their situation to go unnoticed through the years. There has been legislation in their behalf, albeit mostly ineffective, so much so that Sifontes exclaimed, "Never before has there been so much legislation and so little accomplishment."[2] (*Nunca antes se había legislado tanto y cumplido menos.*) Reviewing the legislation that has been enacted and the programs that have been devised to improve the lot of the Highland Indians, we found both uniformly inadequate and haphazardly administered.

Design of the Survey

Analysis of the Guatemalan Agricultural Census of 1950 indicated that 21.3 percent of the nation's farms were less than 0.7 hectares (*micro-fincas*), 67.1 percent were between 0.7 and 7.0 hectares (*sub-familiares*), 9.5 percent were between 7.0 and 45 hectares (*fincas familiares*), and the remaining 2.1 percent were over 45 hectares (*fincas multi-familiares*).[3] There was a higher concentration of small farms in the western highlands, the area of our study: 24.8 percent were micro-fincas, 64.8 percent were fincas sub-familiares, 9.1 percent were fincas familiares, and only 1.3 percent were fincas multi-familiares.[4] Since our interest was in traditional agriculture, we wished to choose our sample from farms of family size or smaller.

---

[1] Nathan L. Whetten, *Guatemala, the Land and the People* (New Haven, Yale University Press, 1961), p. 18.

[2] Julio Hernández Sifontes, *Realidad Jurídica del Indígena Guatemalteco* (Guatemala City, Ministerio de Educación, 1965) p. 281.

[3] See Sergio Maturana, *Las Relaciones Entre la Tenencia de la Tierra y la Eficiencia del Uso de los Recursos Agrícolas en Guatemala* (Guatemala City, Central American Integration Scheme, 1962).

[4] Calculations made on the basis of the Agricultural Census of 1950.

We selected a series of municipios[5] in the Highlands which we believed would yield a representative sample of traditional agriculture as practiced in the region. Three municipios were chosen from the Department of Chimaltenango and two in the Department of Sololá, but all of these within the Cakchiquel linguistic area. Three were chosen in the first department because it has a more heterogeneous system of agriculture than the others in our study due to greater variation in soil, altitude, and other factors. Two municipios were selected in the Department of Quiché, two in Totonicapán, one in Quezaltenango and one in Sololá -- all representing the Quiché linguistic area. In order to include the linguistic area of Mam, we selected two municipios in the Department of Huehuetenango and two in San Marcos. The Cakchiquel, Quiché and Mam are the three major linguistic groups of the Maya who inhabit the Highlands. To complete the sample, three additional municipios were selected from Huehuetenango to represent minor linguistic groups: two for the Kanjobal and one for the Aguacateca.

The municipio is the political unit next in size to the department (state) and, for rural Guatemalans, it is the most significant of their political units. The only other that sometimes may rival the importance of the municipio is the aldea (community or neighborhood). The municipio is a grouping of aldeas. It is in the cabecera (capital) of the municipio that the history of the average Indian's life begins and ends. Here his birth is registered, if it is registered at all, and here his death certificate is filed. Most of his life is spent in the municipio, but now and again depending on distance and size of the market located there, he will travel to his departmental capital and more rarely beyond.

The aldea has special significance in the life of the Indian male because it is commonly the aspiration of an ambitious man to hold the position of alcalde auxiliar (assistant to the mayor) some time in his later years. The alcalde

---

[5] As the term is employed in Guatemala, municipio would erroneously be translated "municipality." To be sure, it does mean that, but as it is here used, the closest translation into English would be "county" because it is a dispersed geographic area, sometimes of considerable size, having its own governing capital or cabecera. The term aldea likewise can be translated as "village," but in Guatemala rural usage it is more akin to "township" or "neighborhood" because it too can cover an extensive area of dispersed homesteads and have no village characteristics whatever.

(the auxiliar is dropped out of respect when referring to the assistant) is an honorary position, unpaid, but of high honor and prestige.

After we had explained the purpose of our study to the alcalde (an elected official) of the municipio, he and auxiliares of the various aldeas helped us choose the aldeas that would probably yield the most typical information for the municipio. Thus, within the 17 municipios, 20 aldeas were selected for study.

Since the Agricultural Census of 1964 had been completed only a few months before we began our work, we were able to use its lists of farmers and farm sizes. From these lists we drew a random sample in each aldea. Our method yielded approximately 400 farms and with the aid of the auxiliares, the randomly selected families were visited. In many cases the auxiliares acted as interpreters.

Due to budgetary difficulties the field work had to be terminated sooner than we had anticipated. This resulted in dropping one aldea among the Quiché in the Department of Quezaltenango, and two aldeas in the Mam linguistic area, one of them lying in San Marcos and the other in Huehuetenango. A total of 348 usable interviews were obtained and we believe the sample is representative of the Highland Indian. The 1964 Census reported a total rural population of 1,212,886 in the Highland region, and only about 85,000 rural residents, roughly 7 percent of the total, were not a part of the population from which the sample was drawn. This excluded group consisted of village non-farm residents and a few large landowners.

The Mayan

The reports of linguists, archaeologists, ethnologists, and anthropologists yield a fairly clear picture of the heritage of the Indians who occupy the present-day Highlands of western Guatemala. Frederick Johnson's "Linguistic Map of Mexico and Central America," shows that the Mayan language stock occupied British Honduras, large portions of Honduras and El Salvador, most of present-day Guatemala, all of the Yucatán Peninsula in Mexico, and some lands in extreme south Mexico where it reaches the boundaries with Guatemala.[6] Kroeber classified the Maya into two divisions, according to their geographic distribution. Those who lived in the lowlands of the Yucatán Peninsula and the lowlands in what are now the Departments of Petén and Izabal in Guatemala were called "Lowland Mayan," to distinguish them from those in the mountainous region, whom he called the "Highland Mayan." J. Alden Mason subsequently substituted "Mayoid" for Lowland, and "Quichoid" for Highland. Our area of research is with the Quichoid.[7]

---

[6] Frederick Johnson, "The Linguistic Map of Mexico and Central America," in The Maya and Their Neighbors (Salt Lake City, University of Utah Press, 1962).

It would be helpful if we knew more precisely whether the Mayan culture started in the Lowlands and spread to the Highlands, or vice versa.[8] There seems to be rather general agreement that yuca, the staple food of lowland civilizations, "worked up the tropical east coast from the Amazon-Orinoco region to foster early Middle American (Mayan) civilization; and that the subsequent discovery or introduction of maize allowed its spread into the highlands."[9]

Research supported by the Rockefeller Foundation on the origin and relationships of more than 300 strains of maize in the "maize bank" of Mexico has succeeded in identifying and establishing the locale of the "two ancient races of maize, Nal-Tel and Chapalote, among the Mayan Indians in the pre-Christian era."[10] Continued research by the Carbon 14 method has established the existence of wild maize as early as 5,000 B.C., with other prehistoric remains having been identified in New Mexico and Peru as early as 3650 B.C., and 2200 B.C. respectively.[11]

---

[7] J. Alden Mason, "Native Languages of Middle America," in The Maya and Their Neighbors. Ibid.

[8] Evon Z. Vogt places the original focal area of development and dispersion of the Maya in northwestern Guatemala, in the Department of Huehuetenango. See his "Summary and Appraisal" in Desarrollo Cultural de los Mayas (Mexico, National Autonomous University of Mexico, 1964), pp. 391-393.

[9] A.V. Kidder, "Archaeological Problems of the Highland Maya," in The Maya and Their Neighbors, op. cit.

[10] E.J. Wellhausen, L.M. Roberts, and E. Hernández X., in collaboration with P.C. Mangelsdorf, Races of Maize in Mexico (Cambridge, the Bussey Institution, Harvard University, 1952), pp. 1-223.

We know that as early as the sixth century B.C. the Maya had developed a precise calendar for recording the passage of time. This period marks the zenith of what is called the Old Empire period, and the New Empire grew and flourished until shortly before the coming of the Europeans in the sixteenth century A.D. The architectural ruins of these two periods and the recasting of Mayan pre-history and recent culture indicate that the early Maya had established a material culture that in many respects equalled that of the Old World of that time. But why the Maya succumbed so easily to the Aztec shortly before the arrival of the Spaniard, and why the Aztec in turn was so easily subdued by the handful of conquistadores under Hernán Cortés, is still a mystery.

The late Venezuelan writer, Mariano Picón Salas, offered one theory when he said:

> "For continued progress, however, these aboriginal civilizations had many technological handicaps. They lacked the horse and other domestic animals to lighten their labor; the wheel was unknown, and they had no real knowledge of metallurgy. If the religious and plastic arts of the Maya, Toltec, and Inca could compete with Oriental creations, in other respects they still had not progressed much beyond Neolithic man."[12]

Oliver La Farge sets forth five stages in the post-conquest sequence of Mayan development, and we are especially attracted by his fifth, which he labels the Second Recent Indian Stage, dating from about 1880 to the present.[13] His

---

[11] E. J. Wellhausen, "Opportunities for Crop Improvement in the Latin American Tropics," Cornell Latin American Year (Ithaca, Cornell University, Dec. 1966). Also, Colin Clark and M. R. Haswell, The Economics of Subsistence Agriculture (London, MacMillan & Co., 1964), pp. 25-26. Also Paul C. Mangelsdorf, R. MacNeish and W. C. Galinat, "Domestication of Corn," Science, Vol. 143, p. 359.

[12] Mariano Picón Salas, A Cultural History of Spanish America from Conquest to Independence. English translation by Irving A. Leonard (Berkeley, University of California Press, 1963), p. 6.

[13] Oliver La Farge, "Mayan Ethnology: The Sequence of Cultures," in The Maya and Their Neighbors, op. cit.

First Recent Indian Stage took up the preceeding eighty years, most of which included the period following Guatemala's independence from Spain, a period in which the new Republic was busy getting itself established and the Indian was left alone to develop a rather stable culture.

Ironically, the First Stage came to a close when Guatemala was beginning to achieve national development after three centuries of colonialism. Having begun coffee production in the mid-nineteenth century, it was exporting over 500,000 quintals by 1870 when the government issued decrees that stopped the progress made by the Highland Indian during the cultural renaissance of La Farge's First Recent Indian period. One of these was the system of _mandamientos_, under which Highlanders were forcefully recruited and impressed as harvest hands in the coffee fields. The other was the decree issued by President Rufino Barrios making illegal the communal operation of lands. The latter decree, by denying the Indian his traditional system, was intended to make forced recruitment of idled Indians under the mandamiento more effective. Even though this latter decree was superceded toward the close of the nineteenth century by a more "humane" _habilitación_ decree, the application of its anti-vagrancy provisions effectively continued the unwilling servitude of the Indian and provided a pool of cheap labor for the landholding class. As a result, the Highlander suffered almost a century of deprivation. La Farge arrived in Western Guatemala long after the habilitación system had replaced the mandamiento, and gives us the following description of his Second Recent Stage.

> "The conflict which we see going on today is not a simple one of Indian versus Spanish, or Indian versus Spanish plus Machine culture, but is in fact a clash between the Machine culture on the one hand, allied to Spanish American culture having its own individuality and itself in conflict with the Machine, and what I am calling the Recent Indian Stage, a well stabilized, complex culture containing certain elements which, although deriving from its predecessors, are not to be found among them. This conflict is the most recent of a series of stabilizations and clashes, a sequence without which present problems cannot be understood."[14]

---

[14] _Ibid_., p. 183.

II. THE POPULATION RESOURCE

Population Size and Composition

According to the 1964 Census, Guatemala continues to be overwhelmingly a rural country. In 1964, 71 percent of the total population was resident in rural areas, indicating only a slight reduction from the figure of 75 percent in 1950. The total population of the Republic is reported to have increased by 53.5 percent in the 14-year intercensal period, at an annual rate of increase of 3.1 percent per year.[1] The 1964 Census data suggested increases of 33 percent in the rural population and 105 percent in the urban population for the entire country between 1950 and 1964. However, the definition of urban population in the recent census was different from that used in 1950, thus invalidating direct comparison of the census data. Adjustment of the 1964 data, using the 1950 definition of urban residence suggests increases of 45.7 percent in the rural population and 77.1 percent in the urban population (Table 1).

The population of the Highlands region increased by 41.3 percent in the period 1950-64, at an annual rate of increase of 2.5 percent. The Highlands urban population increased by 51.9 percent whereas the rural population increased by 39.5 percent. All but one of the departments in the region participated in the large urban increase. This one exception was Totonicapán, where the increase was only 3.3 percent.

Table 2 and Figure 1 show the age and sex distribution of our sample population of 348 families. The sample contained 1,747 people, of which 53.6 percent were male. The average age of the male heads of households was 42.8 years, while the average age of wives was 41.0 years.

Several factors may have influenced the age distribution and composition of the sample population. The most important factor affecting age distribution was the limitation of the study to farm operators who had some land of their own which they cultivated. Farm laborers, therefore, were not included.

---

[1] An annual rate of increase of 3.1 percent would indicate that either the country is among those in the world that are experiencing the highest rates of population growth or that much of the reported "increase" is a reflection of a more complete census in 1964 than was the case in 1950.

Table 1.

Rural and Urban Population Change, Guatemala, 1950 to 1964

Region	1950			1964			1964 (adjusted) [a]			Percent Increase (adjusted)		
	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total
Highlands	933,025	162,546	1,095,571	1,212,886	335,323	1,548,209	1,301,284	246,925	1,548,209	39.5	51.9	41.3
Other	1,161,385	533,912	1,695,297	1,633,526	1,102,738	2,736,264	1,749,422	986,842	2,736,264	50.6	84.8	61.4
Total	2,094,410	696,458	2,790,868	2,846,412	1,438,061	4,284,473	3,050,706	1,233,767	4,284,473	45.7	77.1	53.5

[a] The 1964 Census data were made comparable with the 1950 data by considering as urban only those population clusters which had 2,000 inhabitants or more, or had been considered as urban in 1950, even though they had fewer inhabitants. (Data supplied by L. Schmid of the Land Tenure Center, University of Wisconsin.)

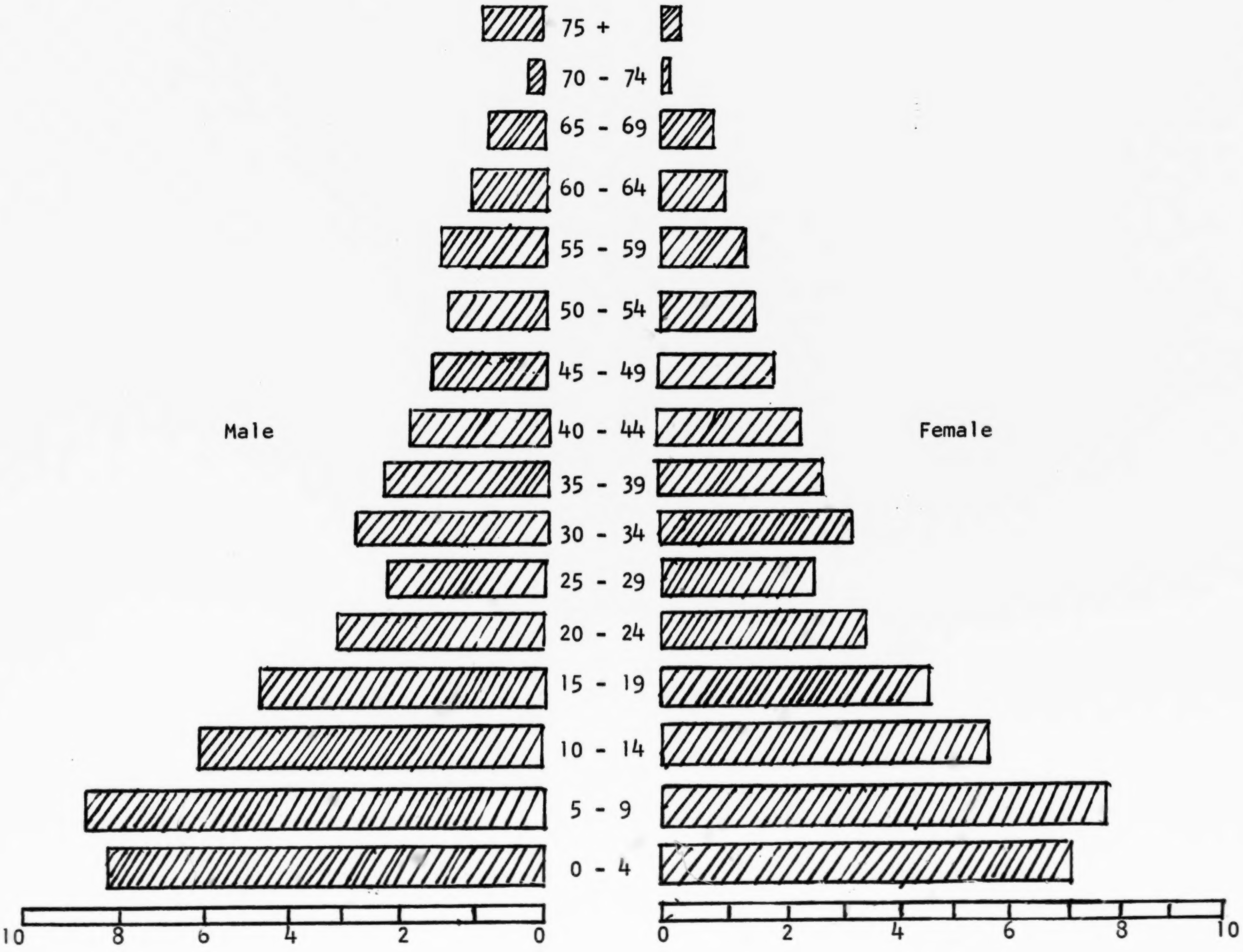
Table 2.

Total Population of Sample Families by Five-Year Age and Sex Groups

Age Group	Male		Female		Total		Total Percent Cumulative
	No.	Percent	No.	Percent	No.	Percent	
0 - 4	148	8.5	130	7.4	278	15.9	15.9
5 - 9	158	9.0	141	8.1	299	17.1	33.0
10 - 14	125	7.2	108	6.2	233	13.3	46.3
15 - 19	99	5.7	83	4.8	182	10.5	56.8
20 - 24	69	3.9	64	3.7	133	7.6	64.4
25 - 29	46	2.6	47	2.7	93	5.3	69.7
30 - 34	58	3.3	58	3.3	116	6.6	76.3
35 - 39	49	2.8	51	2.9	100	5.7	82.0
40 - 44	43	2.5	39	2.2	82	4.7	86.7
45 - 49	37	2.1	32	1.8	69	3.9	90.6
50 - 54	32	1.8	25	1.4	57	3.3	93.9
55 - 59	33	1.9	17	1.0	50	2.9	96.8
60 - 64	16	0.9	9	0.5	25	1.4	98.2
65 - 69	10	0.6	6	0.3	16	0.9	99.1
70 - 74	4	0.2	0	-	4	0.2	99.3
75 +	3	0.6	2	0.1	5	0.7	100.0
Total	930	53.6	812	46.4	1,742	100.0	

Figure 1.

Distribution of Sample Population According to Age and Sex



This decision eliminated younger families because farm laborers, who occupy the bottom rung of the agricultural ladder, are younger than operators. Had laborers been included, the average age of the male family head would have been lower. The average age of the wives was 41.0 years, again higher than the average age of mothers in the total rural population. From the foregoing it follows that the number of children under 5 years of age would be smaller in the sample than their corresponding numbers in the total rural population, because the mothers in the sample were reaching the upper limits of normal fecundity.

The sex ratio in the sample is heavily biased in favor of males, with 115.1 males for each 100 females. In the 1964 census the sex ratio of the national population was 102.7; for the seven departments we have calculated it to have been 101.7 for the same census year. The sex ratio in the sample, which favors the male population so significantly at younger years, almost disappears at the age level of 20 to 24 years, and actually favors the female from that age through the age interval 35-39. We attribute this change to the heavier rate of migration of males than females due to the comparative advantage of males in the labor market on the plantations of the Pacific Coastal Plain. That females do migrate, however, is suggested by the sharp narrowing of the population pyramid, starting at the age interval of 15 to 19 years and reaching its greatest point of contraction in the 25-29 interval. At the interval 40 to 44 the sex ratio swings back to slightly favor the male and thereafter at higher ages the males predominate significantly.

Notwithstanding the factors that have influenced the composition of the sample, it was still a young population, with 46.3 percent of the total being under 15 years of age. This, however, appears to be in accord with national demographic characteristics for the 1964 Census indicating that 47.6 percent of the rural population were under 15 years of age.

The average family in the sample population consisted of five persons. Although this is smaller than might be expected, considering how much has been said concerning the high fertility rates among rural families, the number of children living at home at any given moment must be less than the average number of children per family since the sample is sure to include families whose children have left home as well as families who will be having more children. The Housing Census of 1964 also indicated that there was an average of 5 persons per unit in the rural households of all departments except Petén, which reported 6 per unit.

Table 3 shows the distribution of the sample families by size, from which it can be noted that both the median and mean occur in the interval containing five.

Public statistics for births and deaths were available only by place of their incidence rather than by place of residence. Since all hospitals in the area we studied are in the urban centers of population, we could not gather vital statistics for the rural population of the study area because any such attempt would have necessitated information from primary sources, the search for which would have been prohibitively expensive. Our statements, therefore, are based upon the available published statistics, and we only have these for the country as a whole for the period 1955-64.[2] According to these data, infant mortality has varied from a low of 84.8 to a high of 103.9 per thousand in the ninety-year period, while general mortality has shown a rather consistent tendency to drop, from a high of 21.3 to a low of 16.3 per thousand. Birth rates in the same period have been around 49 per thousand. Infant mortality in Guatemala is a very serious problem. During 1964 more than three times the number of infant deaths per thousand occurred in Guatemala as compared with the United States. (See Figure 2.)

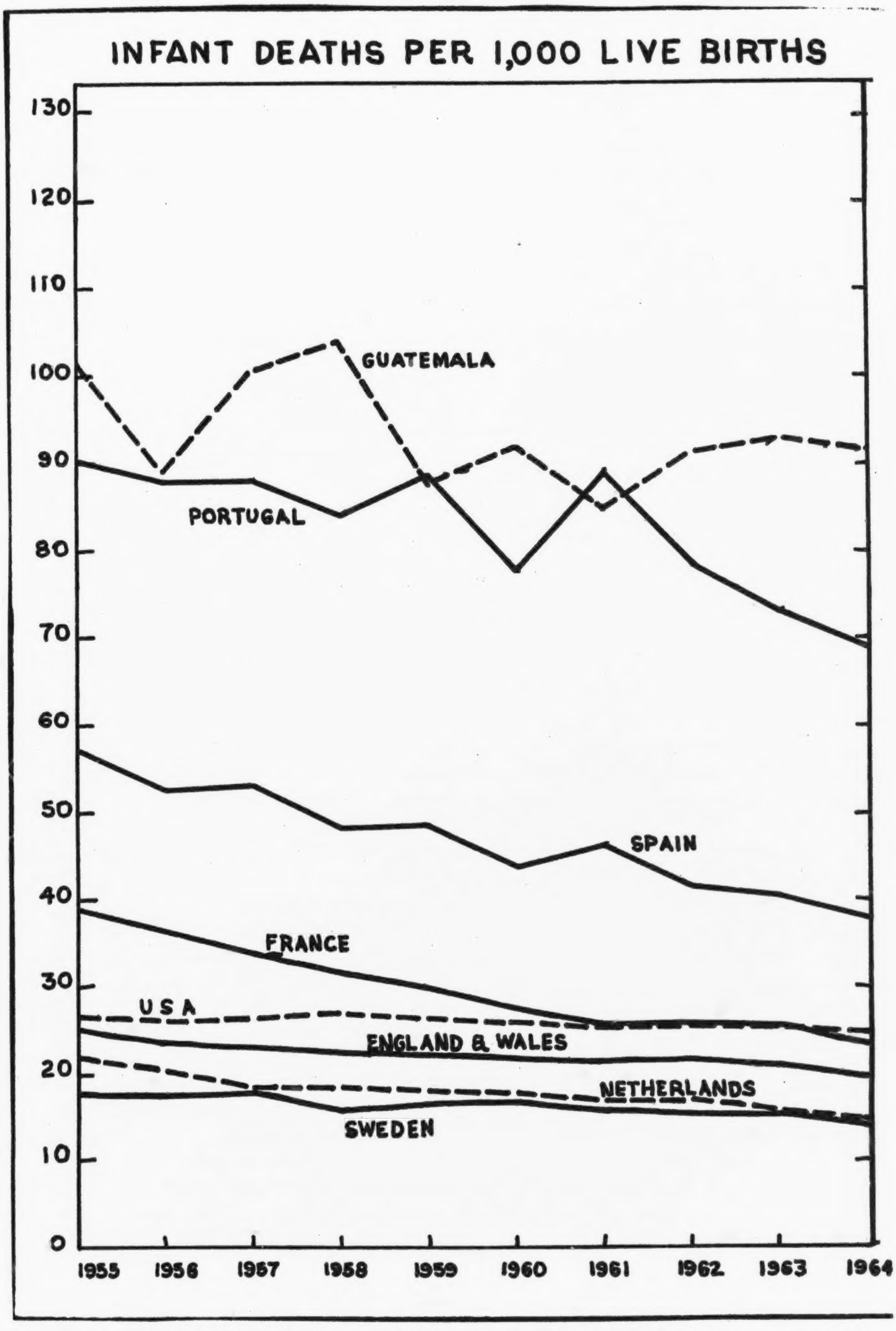
We question whether infant mortality in Guatemala has yet dropped below a rate of 100 per thousand; thus it is doubtful that general mortality has reached the average of 18.8 per year reported for 1955-64. One can speculate on the completeness of such reports. We observed that when an adult died the event was something to which the entire family system reacted. It is reasonable, therefore, to suppose that these deaths of adults were reported quite faithfully by the auxiliares to their superiors in the municipio offices. We did not find the same to be true when very young children died. Their deaths are not as significant as those of adults and undoubtedly many children died in their first year of life without having the fact recorded.

An average of 2.3 children per family have died in families where the head was over 40 years of age (Table 4). This rate in the sample population is only a crude suggestion of what the true mortality of the region might be, but nevertheless, suggests that the incidence of infant (and child) mortality has been high.

---

[2] Trimestre Estadístico, 1963, October, November, and December, Dirección General de Estadística, Ministerio de Economía, Guatemala, and Population Index (Princeton, N.J., Princeton University, April 1966).

Figure 2.



Source: Population Index. Office of Population Research, Woodrow Wilson School of Public and International Affairs. Princeton University, Princeton, New Jersey, April 1966.

Table 3.

Families Classified According to Number of Persons in Family[a]

Number in Family	Number of Families	Percent	Total Number of Persons
One	15	4.3	15
Two	35	10.1	70
Three	49	14.1	147
Four	50	14.3	200
Five	60	17.2	300
Six	48	13.8	288
Seven	39	11.2	273
Eight	27	7.8	216
Nine	15	4.3	135
Ten or more	10	2.9	103
Total	348	100.0	1,747

[a] Only heads of families, their spouses, and children living at home at time of interview were included.

Table 4 Families with Household Heads Over 40 Years of Age Classified According to Number of Children Who Had Died (a)

Number of Children Who Had Died	Number of Families		Total No. Dead Children
	No.	Percent	
None	49	28	0
One	29	16	29
Two	30	17	60
Three	23	13	69
Four	18	10	72
Five	13	7	65
More than Five	15	9	105
Total	177	100	400

(a) The data are tabulated in this fashion rather than in terms of the age of the mother because the head of the family was the informant.

Of the 348 heads of families interviewed, 320 (92 Percent) were living in a conjugal state; 71 percent of this number reported they were married, while 21 percent said they were living in free union. Another 3 percent of the total claimed to be single and lived alone, and the remaining 5 percent were either widowed, separated or divorced (Table 5).

We found no significant difference between the percentages married and those living in free union among the 46 Indian family heads who reported themselves as Protestant and the 283 who were Catholic. Age, likewise, appeared to exercise no influence over the custom of marriage as contrasted with that of free union (Table 5). Subtracting the number of single men, who were concentrated among those household heads under 30 years of age, the percentages living in free union and married did not vary significantly from one age group to another.[3]

---

[3] Wagley found among the Chimaltenangos in Huehuetenango that "As far as I could hear, there were no Chimaltecos who had been married by the Catholic Church. Only twenty marriages are registered in the government records as legal civil union." Charles Wagley, "Economics of a Guatemalan Village," Memoirs of the American Anthropological Association No. 58, p. 40.

Table 5.

Civil Status of Heads of Families Classified by Age

Age	Married		Free Union		Single		Other[a]		Total	
	No.	Per-cent	No.	Per-cent	No.	Per-cent	No.	Per-cent	No.	Per-cent
20 - 29	37	59.8	16	25.8	8	12.9	1	1.5	62	100.0
30 - 39	80	80.8	17	17.2	0		2	2.0	99	100.0
40 - 49	57	71.2	19	23.8	1	1.2	3	3.8	80	100.0
50 - 59	49	72.1	15	22.1	1	1.4	3	4.4	68	100.0
60	24	61.5	6	15.4	0		9	23.1	39	100.0
Total	247	71.0	73	21.0	10	3.0	18	5.0	348	100.0

[a] Includes widowed, separated or divorced.

The fact that three-fourths of the heads of families were married (we did not try to ascertain whether this was a civil or religious marriage, or both), and only one-fourth lived in free union, speaks for the value which the Indian places on the institution of marriage. In another study of a rural population that was more typical of rural Latin America (a mixture of white, of mestizo and Negro), we found only 55 percent of the sample household heads were married while 27 percent lived in free union, and another 10 percent lived in a declared "single" status which seemed to represent their legal interpretation of their civil status.

Mobility of the Population

Among sample households, 80.2 percent of the household heads were living in the communities of their birth, 18.4 percent in another community but in the same department, and only 1.4 percent in other departments (Table 6).

In San Marcos 90 percent of the heads of families were living in the communities of their birth. The corresponding figures for Sololá and Quiché were 91 and 94 percent respectively, while in both Quezaltenango and Huehuetenango the figure was 96 percent.

Heads of families in the Department of Chimaltenango were the most mobile: 56 percent still lived at their birthplace while 42 percent lived in an adjoining município. Chimaltenango was one of the departments most directly affected by agrarian reform attempts from the rewriting of the Constitution in 1945 to the promulgation of the Ley de Transformación Agraria in November 1962. It was among the departments having the highest number of private fincas expropriated at various times during the past 20 years and has the largest number of rural families settled on these expropriated properties. Subsequently, some of the families were forced to abandon this land when a succeeding government decreed legislation contrary to that of its predecessor.

Most of the mobile 42 percent in the Chimaltenango sample were found in the município of Comalapa, aldea Cojoljuyu. In this township a finca was parcelled out by its owner in 1928 among Indian families who agreed to pay for their occupancy rights by working during the coffee harvest on the owner's coastal finca. With the coming of the reform era following the events of 1945, modifications were made in this finca in accordance with the political power structure then in control. By the terms of Decree 900 issued during

Table 6.

Present Place of Residence of Heads of Families, by Department

Department	At Place of Birth		In Adjoining Community in Same Department		In Another Department		Total
	No.	Percent	No.	Percent	No.	Percent	No.
Chimaltenango	56	56.0	42	42.0	2	2.0	100
Totonicapán	33	75.0	11	25.0	0		44
Quezaltenango	21	95.5	1	4.5	0		22
Quiché	61	93.8	4	6.2	0		65
Sololá	64	91.4	3	4.3	3	4.3	70
San Marcos	18	90.0	2	10.0	0		20
Huehuetenango	26	96.3	1	3.7	0		27
Total	279	80.2	64	18.4	5	1.4	348

the regime of President Jacobo Arbenz, each of the families was assured a parcel measuring 30 cuerdas.[4] With the fall of the Arbenz government in 1954, changes were made both in arrangement of the parcels and their occupants. Strife and struggle ensued, and with the coming of still another government policy under President Castillo Armas, the parcels were returned to their original status in 1956. While the foregoing is not a full history of the 54 families who were living in this aldea in 1964, it is enough to indicate why the percentage of mobility is so high in Chimaltenango.

The immobility of the Highlands population is further demonstrated by the fact that the children and siblings of 76.7 percent of household heads still lived in the community of their birth at the time of these interviews. (Table 7) In some of the departments, none of the adult children have migrated from their home communities; and only 4.3 percent of sample families reported that one or more of their adult children had migrated. Most of the migration that occurred was accounted for by siblings of the family head. The heaviest migration of siblings, which occurred in Quezaltenango, can be explained by the fact that the aldea studied was less than three kilometers from the capital city of this department. The migration rate of siblings in the other departments was much less than that of Quezaltenango.

In all the studies we have made on the subject of mobility, and in all others that we know about, we have never encountered as stable a population as the Highland Indian.[5] Richard Adams, who perhaps has had more direct contact studying rural life in Guatemala in recent years than any other social scientist, has under way a study of migration patterns among the Kekchi, originally inhabitants of the department of Alta

---

[4] Unfortunately, one cuerda is not a uniform measurement. One cuerda might vary from .028 hectares to .110 hectares according to whether the cuerda contains 20 or 40 varas (some are smaller). One vara is approximately 33 inches.

[5] See George W. Hill, José A. Silva M., and Ruth Oliver de Hill, La Vida Rural en Venezuela (Caracas, Ministerio de Sanidad y Asistencia Social, 1960), p. 57. Also see C.E. Lively and Conrad Taeuber, Rural Migration in the United States (Washington, D.C., 1939), for the first systematic study made on this topic. To some degree this relative permanency of residence reflects the resort to seasonal employment away from the home community.

Table 7.

Measure of Mobility of Children and Siblings of Head of Family

Department	All family members still living in community of birth		Families from which adult children have migrated		Families from which siblings of family head have migrated		Total
	No.	Percent	No.	Percent	No.	Percent	
Chimaltenango	63	63.0	7	7.0	30	30.0	100
Totonicapán	31	70.5	3	.8	10	22.7	44
Quezaltenango	13	59.1	0		9	40.1	22
Quiché	58	89.2	0		7	10.8	65
Sololá	60	85.7	5	7.1	5	7.1	70
San Marcos	16	80.0	0		4	20.0	20
Huehuetenango	26	96.3	0		1	3.7	27
Total	267	76.7	15	4.3	66	19.0	348

Verapaz, who have been migrating in increasing number into El Petén, Guatemala's sub-country sized department, almost uninhabited since the flight of the "Old Empire" Mayan from there about the ninth century A.D. Thus far, he has not found a single Western Highlands Indian who has migrated toward this lowland.[6]

---

[6] Richard N. Adams, Migraciones Internas en Guatemala, Expansión Agraria de los Indígenas Kekchies hacia el Petén. (University of Texas, mimeo, n.d.).

III. THE LAND BASE

Farm Size

Guatemalan agriculture is characterized by a concentration of farming land in a few large farms. According to the 1950 Agricultural Census there were 348,687 farms in Guatemala, which occupied an area of 3,720,833 hectares. The average size of farms was 10.68 hectares (Table 8). The Census data indicated that the farms which were 45 hectares or larger (0.31 percent of the total number of farms) contained 50.35 percent of the land whereas farms of less than 7 hectares in area (88.35 percent of the total number of farms) contained only 14.33 percent of the farm land (Table 8).

At the time of the 1950 Census the Highlands of Guatemala contained 162,289 farms (46.54 percent of the nation's farms), and they occupied 992,000 hectares (26.62 percent of the total farm land). As a result, the average farm area in the region was 6.11 hectares (Table 9). The Highlands contained a larger proportion of the nation's small farms than did other regions, while it contained fewer large farms. It contained 54.17 percent of the farms less than 0.70 hectares, but only one farm larger than 9.020 hectares.

The sample population was classified according to the total farm area and also by area cultivated. The average total farm area for the sample was 3.00 hectares, while cultivated area was 1.49 hectares (Table 10). The average total farm area and cultivated area was computed for each of the six classes used in the classification of the sample data (Table 10). This analysis indicates that as the total farm area increases, the proportion of the farm cultivated diminishes. Farms less than .50 hectares cultivated 79.3 percent of the farm, while those in excess of 2.49 hectares cultivated 41.6 percent of their land.

---

[1] The farm size data given in hectares was converted from the measure which is used in the Highlands--the cuerda, which was introduced from Spain to measure land areas where possessions are tiny. It is a square measure, which varies within and between Highland communities, and even on individual farms. The concept itself is based on another measure--the vara, which is also an old Spanish linear measure of varying length, but in Guatemala it has been accepted as being 0.835 meters (approximately 33 inches) in length. A cuerda of land can vary from measuring 15 varas square to as high as 40, and usually when referring to the size of his corn field or milpa, a different size cuerda is used than that which describes the family garden or huerta. We did not find out the etiology of this variance in the size of the cuerda because none of our informants was able to follow as sophisticated an inquiry as such an attempt would have entailed.

Table 8.

Land Concentration in Guatemala by Size of Holdings, 1950

Farm Area (Hectares)	Farms		Total Area		Average Farm Size
	Number	Percent	Hectares	Percent	
Less than 0.70	74,269	21.29	28,575	0.77	0.39
0.70 - 1.39	91,581	26.27	94,554	2.54	1.03
1.40 - 3.49	99,779	28.61	212,091	5.70	2.12
3.50 - 6.99	42,444	12.18	197,911	5.32	4.66
7.00 - 22.39	26,916	7.72	310,915	8.36	11.55
22.40 - 45.09	6,125	1.76	189,916	5.10	31.01
45.10 - 450.99	6,488	1.86	813,262	21.86	125.35
451.00 - 901.99	569	0.16	354,270	9.52	622.62
902.00 - 2,254.99	358	0.10	495,508	13.31	1,384.08
2,255.00 - 4,509.99	104	0.03	327,649	8.81	3,150.47
4,510.00 - 9,019.99	32	0.01	196,333	5.28	6,135.41
9,020.00 and greater	22	0.01	499,848	13.43	22,720.36
Total	348,687	100.00	3,720,832	100.00	10.68

Source: 1950 Agricultural Census, Guatemala City.

Note: Preliminary releases of the Agricultural Census of 1964 give the number of farms as 417,344 and the total of land area in farms as 3,442,324 hectares (4,926,766 manzanas) making for an average sized finca of 8.2 hectares.

Table 9.

Land Concentration in Guatemalan Highlands By Size of Holdings, 1950

Farm Area (Hectares)	Farms		Total Area		Average Farm Size
	Number	Percent	Hectares	Percent	
Less than 0.70	40,230	24.79	15,872	1.6	0.39
0.70 - 1.39	41,023	25.28	42,656	4.3	1.04
1.40 - 3.49	43,150	26.59	95,232	9.6	2.21
3.50 - 6.99	20,902	12.88	99,200	10.0	4.75
7.00 - 22.39	12,654	7.80	144,832	14.6	11.44
22.40 - 45.09	2,272	1.40	68,448	6.9	30.13
45.10 - 450.99	1,785	1.10	215,264	21.7	120.60
451.00 - 901.99	146	0.09	90,272	9.1	618.30
902.00 - 2,254.99	97	0.06	119,040	12.0	1,227.22
2,255.00 - 4,509.99	23	0.01	72,416	7.3	3,148.52
4,510.00 - 9,019.99	3	neg[a]	18,848	1.9	6,282.67
9,020.00 and greater	1	neg[a]	9,920	1.0	9,920.00
Total	162,286	100.0	992,000	100.0	6.11

Source: 1950 Agricultural Census, Guatemala City.

[a] Negligible

Table 10.

Sample Farms Classified by Total Farm Area and by Cultivated Area

Area Class (Hectares)	Classification by Total Area					Classification by Cultivated Area		
	No. of Farms	Percentage	Av. Total Farm Area	Av. Cult. Farm Area	% of Farm Area Cult.	No. of Farms	Percentage	Av. Cult. Farm Area
0.00 - 0.49	54	15.5	0.29	0.23	79.3	82	23.6	0.28
0.50 - 0.99	65	18.7	0.73	0.56	76.7	93	26.7	0.72
1.00 - 1.49	42	12.1	1.24	0.92	74.2	53	15.2	1.25
1.50 - 1.99	47	13.5	1.75	1.18	67.4	46	13.2	1.73
2.00 - 2.49	30	8.6	2.20	1.66	75.5	27	7.8	2.18
over 2.49	110	31.6	7.11	2.96	41.6	47	13.5	4.80
Total	348	100.0	3.00	1.49	49.3	348	100.0	1.49

The largest farm in the sample was 42.24 hectares; two farms had an area in excess of 20 hectares and only 18 (5.2 percent) had more than 10 hectares. At the other end of the distribution, 54 of the 348 had less than 0.5 hectares of land. The highest concentration of farms of less than 0.5 hectares was in Totonicapán. On the other hand, in Sololá we found the highest percentage of farms, the area of which is 2.5 hectares or more (Table 11).

Land has only two major use classifications in the Highlands -- crop land and wood lot. The average area of land among the sample farms allocated to pasture, wood lot and cultivation was 0.21, 1.08 and 1.49 hectares, respectively (Table 12). Wood lots were found on 58.6 percent of the farms. Pasture lands (accounting for 8 percent of all land in farms) were found only at altitudes over 2,500 meters, and then only in the extreme western part of the region. Only 14.6 percent of the farms contained pasture, and only in Totonicapán and San Marcos was there a significant incidence of pasture land.

Patterns of Inheritance

Inheritance practices vary somewhat in the Highlands, but traditionally land is divided equally among sons of the deceased father, if he had any, and quite often among the daughters. We found that 40.8 percent of heads of households obtained all the land they had through inheritance; another 26.6 percent had added to their original legacy by purchase, so that 67.4 percent of the total sample had obtained all or part of their land by inheritance (Table 13). Only 25 percent had obtained all their land through outright purchase.

Traditionally, it is the custom to have one's lands given or promised to one's sons as the latter reach manhood, but if that is not the case and time allows, partitioning takes place just before death occurs, even though such a transfer may not be legally registered. Complications may arise when a farmer dies intestate. We found groups of farmers whose names did not appear in the census lists with which we had been provided for the respective communities. Upon questioning, we found that their fathers had died intestate but they still reported their deceased fathers as owners and operators of the lands.

Table 11.

Distribution of Sample Farms Cultivated According to Departments and Area Cultivated

Department	Under 0.5		0.5 - 0.9		1.0 - 1.4		1.5 - 1.9		2.0 - 2.4		2.5 & over		Total
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	
Chimaltenango	8	8	34	34	24	24	20	20	4	4	10	10	100
Totonicapán	23	52	13	30	3	7	3	7	2	4	-	-	44
Quezaltenango	9	40	5	23	1	5	2	9	-	-	5	22	22
Quiché	25	39	19	29	9	14	6	9	2	3	4	6	65
Sololá	8	11	9	13	10	14	9	13	11	16	23	33	70
Huehuetenango	11	41	7	26	1	4	2	7	3	11	3	11	27
San Marcos	-	-	4	20	5	25	4	20	5	25	2	10	20
Total	84	24	91	26	53	15	46	13	27	8	47	14	348

Table 12.

Average Area Per Farm by Class of Land Use[a]

Department	Pasture	Woods[b]	Cultivated	Other[c]	Total
Chimaltenango	0.05	1.56	1.41	0.16	3.18
Totonicapán	0.40	0.86	0.64	0.31	2.21
Quezaltenango	0.11	0.44	2.06	0.09	2.70
Quiché	0.12	0.97	1.00	0.01	2.10
Huehuetenango	0.25	0.85	1.11	0.02	2.23
Sololá	0.06	1.12	2.46	0.34	3.98
San Marcos	1.54	0.44	1.74	0.04	3.76
Average	0.21	1.08	1.49	0.22	3.00

[a] Average for 348 farms.

[b] Includes waste land.

[c] Includes household area.

Table 13 Manner in Which Land was Acquired

Process	Number	Percent
Inheritance	142	40.8
Inheritance and Purchase	93	26.6
Purchase	87	25.0
Donation	14	4.2
Unknown	12	3.4
Total	348	100.0

Individual and Communal Ownership

As one would expect in a traditional society where property is mainly acquired through inheritance, the bulk of the operators were owners. In all, 329 of the 348 informants (94.5 percent) owned all or part of their farms. The remaining 5.5 percent rented and paid rent in cash or kind (Table 14).

Without exception, the proprietors all claimed to have documentary evidence of title to their properties. We did not verify these claims. However, as all anthropological studies among Middle American Indians have shown, Indian boys take on the responsibilities of manhood at an early age. The father's wealth is indicated by the extent of his landholding and when marriages are arranged by the parents, rather than by the young couples themselves, the amount of land which the father can bestow on his son has much to do with the bride he eventually obtains. The land given in this manner is given the son for use only; the father retains title in his own name. Knowing this practice, undoubtedly many of the "owners" of land whom we interviewed interpreted their period of "ownership" from the time they were in reality only users of their father's lands. If the fathers were still living, some may not even have been legal owners at the time of the interview. Wagley puts the time of possession in the following manner: "Not until a man is a father or even a grandfather is he actually the owner of family lands. Most fathers keep control over the bulk of their property and thus over their sons until death."[2]

---

[2] Charles Wagley, Op. Cit., p. 6.

Table 14 Tenure Status of Sample Families

Tenure Status	Number	Percent
Owner	247 (a)	71.0
Renter	8	2.3
Owner & Renter (b)	58	16.6
Renter & Owner (c)	24	6.9
Share Cropper	11 (d)	3.2
Total	348	100.0

(a) Nine owners also had rights to use of land in communal properties
(b) Owned the major part of landholding.
(c) They rented the major portion of their landholdings.
(d) Seven share croppers also owned land which they had acquired through inheritance.

Because individual ownership of land is something that was imposed relatively recently upon the Indians by the Spanish culture, and because communal ownership has centuries of tradition, repeated governmental decrees of the nineteenth century have not yet abolished this type of ownership. Communal ownership was supposedly abolished by Presidential decree in Guatemala in the nineteenth century, and although that decree was supported by subsequent presidents, the practice continues to persist. We found it prevalent in the Department of Totonicapán, where the system went under the name of parcialidades. There were, for example, the parcialidades of the towns of Momostenango, Santa María Chiquimula, San Bartolo, and San Andrés Xecul. They bear a family name; usually the name of the one who supposedly obtained the original land grant during the early colonial period. We were informed of seven parcialidades in the department and were given their approximate land areas, which ranged from 89.4 hectares in the smallest communal holdings to 2,012.4 hectares in the largest. The president of one of these properties -- at least that was the official title bestowed upon him by the members of the association -- said his group was composed of 103 members, and the membership is limited exclusively to males whose paternal or maternal name is that of the original beneficiary of the land grant. Some of these grounds are limited exclusively to the gathering of fire wood, and even the amount of that is strictly allocated to each member every year. Some can be used for pasture. The royal grants or titles which stipulate the metes and bounds of these properties are zealously guarded by an elected member of the parcialidad, and he and only one other designated member know where it is held for safekeeping.

Charles Wagley, who studied the Indians of the Department of Huehuetenango, reports the same preference for the communal title that McBride had found in Mexico quite a few years earlier. Consequently, few Chimaltecos have ever bothered to obtain individual land titles at either the municipio or departamento offices. We suspect that the majority of the owners have no documents to prove their rights to the land.

> "Chimaltecos (residents of Santiago Chimaltenango, Huehuetenango), however, still guard with great care their municipal title, given to them during the early nineteenth century, trusting in its power to preserve to them all the lands of their municipio, although their Título has long since been invalid in the eyes of the governmental authorities."[3]

Wagley also goes on to say:

> "The Título is kept in almost sacred state by the current Principales and the Alcalde, the most important officials in the village. Around it revolves great secrecy; no one will say exactly where it is kept for fear of theft of the paper and thus rights to the lands."[4]

The antiquity of the Título and zealousness in guarding the secret of its whereabouts are similar to the account we were given concerning the document establishing the validity of the parcialidades in Totonicapán. They both attest to the persistence of the institution of communal property, and their similarities suggest their common origins.

We conclude, therefore, that many of the assurances of title given by our informants may mean they possess a bundle of rights that are recognized only among members of their family and the local community. These rights would not necessarily be upheld in a court of law in the event of a challenge to ownership of the land.

---

[3] Ibid., p. 62.

[4] Ibid., p. 62.

IV. THE HIGHLANDS MILPA

Maize, the Basis of the Enterprise

Maize is the principal food of every Indian so its culture predominates in the Highlands. Preparation of the land for planting, the actual planting, and the first, second, third, and sometimes, the fourth cultivation to control weeds and to repair storm damage, and then finally harvesting, shelling and storage make maize culture a year-round process. Only a few weeks after the seed ears have been hung away under the eaves or stored under the rafters of the house, it is time to start the job of clearing the dried stalks and accumulated vegetation in the fields so that they can be burned, and thus begin the annual task on its next cycle.

Beans are another important item in the indigenous diet. The planting techniques vary between localities, partly because of cultural determinants which many anthropologists have described, and partly because of the dictates of experience. While "large" farmers will plant whole fields of corn and beans separately, hoe culture permits combining both in the same field. Even in the same hole which the peasant opens with his hoe, he will drop in the required four or five kernels of corn, followed with a variety of pole bean and a lima bean. In Pamumus and Chimazat, aldeas of the Cakchiquel in the Department of Chimaltenango, we saw women in fields that already had been planted to corn, following with their own _coas_ or planting sticks, seeding beans. The planting of beans is the woman's task and although she plants the beans in the same hill into which was dropped the seed corn, she follows her husband in planting by a period of "two days later so that it will not kill the corn."[1] The pole bean is planted with the corn so as to grow up around its stalk, while the dwarf bean or _frijol de suelo_ or _surco_, as its name implies, is planted within the furrows. Lima beans are likewise planted between the rows as are many varieties of _chilacayotes_ (squash), the _quisquil_ of Guatemala or the _chayote_, as it is known in other Latin countries, _guícoy_ or pumpkin, and cucumbers.

Potatoes are planted between the rows and when that is done, a lesser amount of the other crops is planted, so that here and there will be a squash, a pumpkin, and frequently a lima bean stalk. If the farmer has a special field of potatoes, even though it measures only two or three cuerdas in size, he has reached a level that takes him above the average peasant we are describing because he has land and enough money to take a risk on a cash crop in addition to the milpa which he plants elsewhere to ensure his family's subsistence.

---

[1] See Wagley's monograph for an anthropologist's interesting account of how the women are excluded from the ritual surrounding the cultivation of maize for fear of casting an evil spell on the crop. _Op. cit._, p. 33ff.

The fraccionamiento may have had its origin, not in the splitting up of land due to inheritance patterns, but in the search for plots of land at different ecological levels, providing variation in drainage and soil types to allow both a "summer" and a "winter" milpa. The first would provide the much sought elote, or roasting ear, in July or August, while in the other, corn would not begin to mature until in September and October, depending upon altitude. Because storage facilities are inadequate and harvests from the plots are small, every advantage that nature provides has to be seized if tortillas are to be on the table regularly; otherwise the Highlanders must suffer a long period before harvest without corn.

The agricultural season starts when the dry period of "summer" is sufficiently advanced to permit the burning of the previous season's vegetation. This begins in January and depending upon the variations of altitude, continues through February and March. When we speak of burning we do not wish to imply that the Highland Indian practices "swidden"[2] farming or a shifting type of agriculture, where he shifts from one plot of land, whose fertility he has exhausted, to another where he slashes and burns either the virgin or second growth forest and thus starts his "swidden" anew. Evon Vogt refers to "swidden" farming among the Highland Maya of Chiapas, a state on the southeastern border of Mexico and Guatemala. He asserts that "swidden" agriculture is the rule and if he uses the term correctly, these Mexican Mayans are more fortunate than their cousins in Guatemala because the latter can not afford to leave land in fallow.[3]

---

[2] English dialect meaning "burned clearing" suggested by Clark and Haswell, op. cit., who have a good description of swidden farming on pages 38ff.

[3] Evon Z. Vogt, "Some Observations and Predictions on Trends of Change in Highland Chiapas, Mexico," paper read at the Cornell Latin American Year Conference on the Development of Highland Communities in Latin America, March, 1966.

Shifting agriculture exists where there is land with virgin or secondary growth which can be reclaimed when existing garden areas are no longer considered suitable for cultivation, or where each farmer has enough land to allow plots to lie fallow and thus recoup a portion of their fertility in the process, while he cultivates others in their regular order of sequence. This is too wasteful a practice for Highlanders to follow, because it would call for each to possess a minimum of four and a half hectares of crop land, of which only a third would be in production in any one period of the cycle. As we have shown, only the largest farmers have this amount of crop land (Table 10).

We suspect the Highlander burns chiefly to control weeds, not to fertilize. In this tropical zone with an annual rainfall of about 60 inches, weeds grow fast, and when cultivating and weeding are tasks that have to be carried out during the rainy season, dry spells are too infrequent and short to allow weeds to be effectively controlled. If the vegetation can be burned before land is made ready many weed seeds are destroyed, thereby reducing the subsequent amount of labor required for weeding.

The first rains, which may start as early as late April, but more often the middle of May, produce changes that seem absolutely incredible. Fields and hillsides that were dead, brown and dusty, suddenly are green and scintillating with new life. The summer maize planted late in February or early March thrusts up its leafy stalks. By six o'clock in the morning, workers are in the fields, taking a break for lunch at eleven and working again until four or five to complete an eight to ten hour day. The summer milpa is planted before the rains start, but the winter milpa is planted after the rains have begun, as late as the first of May. Extra help is hired, or relatives come to exchange labor, in the heavy chore of land preparation, which is done by most Indians with the hoe, and many collaborate to get a field seeded in one day if possible. Six to eight weeks after the planting of the first summer milpa, the maize is ready for cleaning and hoeing, and when that has been done, the winter maize calls for its turn.

Completion of the third and final round of cultivating winter fields varies within the region from late July to September. Occasionally, the hill farmer has to cultivate yet again very late in the season. After the cultivation cycle has been completed, the farmer is free to look for work away from home. Then he may spend one or two months picking coffee in the cafetales that abound below the altiplano and on the Pacific slopes, as his ancestors were foreed to do from the time that Guatemala became a major exporter of coffee in the later half of the nineteenth century. With the advent of cotton as a major export crop following World War II, some of the Highlanders began to work in its harvest during the months of November, December and January.

Shortly before the corn is mature the stalks are bent over to protect the ripening ears from the rains because the downpours (aguaceros) of the temporal, which generally occurs in November, could rot the ears. Actually, with the killing of the stalk in this fashion the corn dries faster. This practice also provides more protection against marauding birds. Early potatoes are dug in September and early squash are marketed, although neither harvest gets into full swing until much later. Some of the aldeas have a climate that favors two harvests of wheat, one in September and another in February, as was the case in Chipata, in the northern extremity of the department of Chimaltenango. Harvests reach their height in December and January, so almost a full calendar year has gone by since the first raking and burning of vegetation began.[4]

Although a few farmers still use animals to tramp out the grain from wheat and other small grains, most of the threshing floors are no longer used because threshing rigs of the Gremial Nacional de Trigueros, whose main offices are in Quezaltenango, or those provided by the Servicio de Fomento de la Economía Indígena, thresh most of the crop. Also, their trucks haul most of the grain to the several mills in the region. Bean vines are carried to the patio of the farm home. After they are well dried the women and children do the flailing and the winnowing whenever there is a strong enough wind blowing.

Corn is picked and carried to the house in the husk and then stored according to the means of the farmer. If he is one of the fortunate, he will have a small troje, or corn crib, measuring no more than about five feet square and about as high, made of adobe and set on a slightly raised platform.

---

[4] Leon Vailadares found that in Huehuetenango guisquil is planted near the house at the beginning of the rainy season and harvested during the months of August, September and October, depending on the length of the growing season. It is planted near the house so that the vines may climb the nearby shade trees. The ayote he specifies "se siembra el 6 de enero y se cosecha en julio y agosto." We did not find out why it has to be seeded on January 6th. See B. Costa-Amic, Editor, El Hombre y el Maíz, Etnografía y Etnopsicología de Colotenango, México (1957), p. 53.

The majority, however, store their maize in one corner of the house in a temporary bin made of corn stalks and from there the woman of the house takes the ears day by day, shells them in her hands and so, starts the daily task of tortilla making.

Principal Crops and Yields

From the preceding description, it should be obvious that any breakdown of the farm enterprise into precise units by crops is difficult. All of the farms had some corn plantings (Table 15). There was an average of 1.03 hectares of "sole" corn plantings per farm. Corn yields ranged from a low of 14.4 quintals per hectare in Huehuetenango to 24.4 quintals in Quezaltenango, with a regional average of 18.96 quintals per hectare (Table 16).[5] The high yield in Quezaltenango may have been obtained because most of the farmers used chemical fertilizer. This was not true in the other departments. In Huehuetenango not a single operator had used any.

Wheat was cultivated on 130 farms. The total area planted was 128.1 hectares, about 36 percent of the area planted to maize. Two of the departments, Quiché and Huehuetenango, planted little or no wheat. The highest concentration of wheat farmers was found in Sololá and San Marcos. With a yield of 27.9 quintals per hectare, Sololá was the department with the highest yield and since a large portion of the farmers in this department grew wheat, the overall regional yield is unduly influenced. It amounted to 23.0 quintals per hectare. Without Sololá, the regional average would drop to about 19 quintals per hectare.

Although potatoes represent an insignificant part of the farm enterprise, we included the crop separately only to indicate its scarcity as a crop in the subsistence economy. A total of 42 farms reported they had separate potato plantings but the total area planted amounted to only 5.9 hectares. Even if we add to this the area of land in which potatoes were interplanted with corn, the total is only 10.6 hectares, or less than three percent of the amount of land in corn. If we remove the department of Totonicapán from the total, the average yield could be about 197 quintals per hectare, a good demonstration of the possibilities of this crop in the Highlands.

---

[5] The quintal used here is a hundred weight measure.

Table 15.

Principal Crops Cultivated, Distribution by Farms

Department	Corn	Wheat	Potatoes	Beans	Beans-Corn	Lima Beans-Corn	Potatoes Corn	Total Number of Farms
Chimaltenango	100	31	5	4	70	55	22	100
Sololá	70	43	3	21	25	42		70
Totonicapán	44	22	19		15	16		44
Quiché	65	8	5		54	22	9	65
Quezaltenango	22	10			9	12		22
San Marcos	20	16	10			11		20
Huehuetenango	27				12	4		27
Total	348	130	42	25	185	162	31	348

Table 16.

Area Cultivated (hectares) and Yield (quintals) of Principal Crops

Department	Corn		Wheat		Potatoes		Beans	
	Area	Yield per Hectare	Area	Yield per Hectare	Area	Yield per Hectare	Area	Yield per Hectare
Chimaltenango	119.4	20.4	18.3	18.3	1.2	235.9	0.8	8.6
Sololá	104.2	16.4	53.3	27.9	0.5	134.7	8.2	11.0
Totonicapán	14.8	17.6	7.6	17.3	2.7	60.0		
Quiché	58.3	21.3	5.8	13.0	0.6	145.2		
Quezaltenango	15.0	24.4	30.1	22.4				
San Marcos	18.5	20.7	13.0	18.3	0.9	210.0		
Huehuetenango	29.2	14.4						
Total	359.4	19.0	128.1	23.0	5.9	134.0	9.0	10.8

Frijoles de suelo were grown as a separate crop on only 25 of the 348 farms studied, whereas frijoles de milpa, or frijoles de vara, were intertilled on 54 percent of the milpas and used about 45 percent as much land as did corn. But the yields of the two varieties of beans were radically different. The first yielded 10.8 quintals per hectare, while the other yielded only 1.7 quintals.

The haba (similar to the lima bean) was another popular crop interplanted with corn, appearing on 162 farms. Yields with such beans were slightly higher than for the other varieties, averaging 2.0 quintals per hectare, with no marked variation between departments.

Capital Investment

Taking the owners' estimates of current market values for their land, buildings, livestock and tools, we arrived at an average value of Q1,370 per farm (Table 17). Omitting for the moment the atypical department of Quezaltenango, the estimates are reasonably uniform between departments, the difference between the lowest and highest values being only Q500, or about one-third the average value. There were three main factors that influenced the variation.

One was the proximity of the sample aldea to a large urban concentration. The sample community in Quezaltenango, which was less than three kilometers from the capital of the department clearly demonstrates this factor's influence. This sample aldea is really a part-time farming community where many of the farmers work in the factories, commercial establishments and service industries of the city in the morning, and tend their lands in the afternoon. Consequently, land values are high. Rentals, for example, were found to be as high as Q1.25 per cuerda per year for the best land, but since much of the land is hilly and stony we found prevailing rentals to be around Q0.75 per cuerda.

Another factor which influenced average farm values was proximity to an all-weather road. If this happened to be the paved inter-American Highway, as was the case for part of the sample drawn in the department of Totonicapán and for the aldeas of Chimazat in Chimaltenango, or San Andres Semetabaj in Sololá, the estimated values reflect this proximity. In contrast, to mention only a few communities where isolation held down values, we would cite the case of Pamumus, which as our field notes say, "is reached only after a difficult and muddy climb of eight kilometers north from the capital of Comalapa municipio." Again, quoting from our notes concerning Zeabaj, "One arrives there by a shortcut that leads up a slope which is almost 45 degrees as are the cultivated lands."

Table 17.

Average Value per Finca of Land, Buildings, Livestock and Equipment

Department	Land	Buildings	Stock and Equipment	Total
Chimaltenango	877	136	63	1,076
Totonicapán	702	111	135	948
Quezaltenango	4,367	441	244	5,052
Quiché	951	214	141	1,306
Huehuetenango	925	100	85	1,110
Sololá	1,008	175	89	1,272
San Marcos	599	104	196	899
Average	1,089	170	111	1,370

A final example, "The trail which leads to Chipata is poor, and frequently disappears," (el camino que conduce a Chipata es malo y frecuentemente se esconde") because it is lost under landslides that are almost a daily occurrence in the rainy months of July to November. All these last three aldeas are in the department of Chimaltenango and depress the average farm values in that state. Since the only means of reaching the local market was on foot or pack horse, land values were low.

Table 18

Livestock Population on Survey Farms

Category	Number of Head	Number of Farms
Sheep	1,085	65
Cattle (dairy)	80	45
Fowl	2,668	290
Pigs	175	125

Capital investment in stock and equipment was influenced by the type of farming. Livestock was the most influential component in this category. Most farmers owned a machete and hoe and a few also possessed hand sprayers and cross-cut saws. In the group composed of Totonicapán, Quezaltenango, Quiché, and San Marcos, the average investment was Q179 per farm, whereas for the other three it was Q79 or only about half as large. The higher figure for Quezaltenango was due to the presence of fairly large flocks of sheep on some farms. Sheep were almost totally absent in Chimaltenango.

V. MANPOWER AND TECHNOLOGY

The Labor Force

Taking the group as a whole, 42 percent of the family heads reported they were the only ones employed on their farms; family head and wife constitute the labor force on 11.5 percent of the farms. In another 27.6 percent, the labor force was made up of the head and his sons; in another 17.5 percent the entire family worked, including the wife as well as the husband and children (Table 19). Thus the farms in the Western Highlands may appropriately be called family farms.

Half of the 58 percent of farms, where the head was not the sole person working, employed peons (or mozos, as they are usually called in rural Guatemala). As might be expected, 54.4 percent of the hired labor was on farms having a cultivated land area of more than two hectares; the percentage dropped to 28.6 on the farms with the cultivated land area that averaged between one and two hectares; while only 16.9 percent were on those having less than one hectare of crop land.[1]

Our data confirm those of the anthropologist, Sol Tax, who found that women shared in all the work of farming except "tasks considered too difficult for women--preparing the soil for corn, making garden beds, planting coffee bushes; and only men (using the trumpline) carry heavy loads."[2]

In order to obtain the data relating to labor units each farmer was asked how many man-days of labor were used in land preparation and how it was prepared. He was asked about the labor inputs in planting and cultivation, including the time spent on herbicidal weed control and insect control with pesticides, harvesting, threshing, shelling and winnowing. This kind of questioning was repeated for each of the major crops--corn, frijoles, wheat, and potatoes.

---

[1] These percentages are calculated from a random sample of one-third of the 348 farms.

[2] Sol Tax, Penny Capitalism: A Guatemalan Indian Economy, Smithsonian Institution, Publication No. 16 (Washington, D.C., 1953), pp. 90-95. Also see Wagley, op. cit., Bunzel, op. cit., for other anthropological descriptions of customs concerning agricultural practices which prevailed in some Highland communities. Some of our informants told us they still consulted the local shaman who determined the appropriate day for planting. Some also still complied with the semi-pagan rituals prescribed for the planting ceremonies.

Table 19.

Composition of Family Labor Force Employed on the Home Farm

Department	Total	Head Alone		Wife and Head		Head, Wife and Sons		Head and Sons		Other	
		No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent
Chimaltenango	100	53	53.0	11	11.0	8	8.0	25	25.0	3	3.0
Totonicapán	44	19	43.2	4	9.1	8	18.2	12	27.3	1	2.2
Quezaltenango	22	12	54.4			4	18.2	6	27.3		
Quiché	65	14	21.5	17	26.2	18	27.7	16	24.6		
Huehuetenango	27	13	48.2	2	7.4	7	25.9	5	18.5		
Sololá	70	28	40.0	4	5.7	10	14.3	27	38.6	1	1.4
San Marcos	20	7	35.0	2	10.0	6	30.0	5	25.0		
Total	348	146	42.0	40	11.5	61	17.5	96	27.6	5	1.4

Table 20.

Average Man-Months[a] of Labor of the Operator and Other Family Workers in Production of Principal Crops By Size of Cultivated Area

Hectares Cultivated	Average Hectare Per Farm	Number of Farms	Percent	Average Man-Months Employed[b]	Average Man-Months Employed[c]
Under 0.5	0.27	83	23.9	1.0	1.70
0.5 to 0.9	0.72	92	26.4	1.85	3.18
1.0 to 1.4	1.25	53	15.2	2.96	4.98
1.5 to 1.9	1.73	46	13.2	3.14	6.69
2.0 to 2.4	2.18	27	7.8	3.34	6.73
2.5 + over	4.80	47	13.5	4.51	11.74
Total	1.49	348	100.0	2.65	5.68

[a] One man-month is defined to consist of the labor input of a male adult for 26 days, each day being nine hours' duration.

[b] Employment period includes time in land preparation, cultivation, harvest, and threshing. These figures are for the labor provided by the head of the family only.

[c] These figures include labor of the head of the household and his family.

The family labor used on the farms increased from 1.70 man-months on holdings of under 0.5 hectares (average 0.27) to 11.74 man-months on farms of 2.5 hectares or more. Of this, one man-month of a total of 1.7 man-months was supplied by the operator on the smallest farms; and on the largest farms the operator supplied 4.5 man-months.

If we use the number of man-months used by the head of the household and his family on the farm, the amount of labor required to cultivate an average farm of 0.27 hectares increases from 1.0 man-month to 1.7 man-months. We believe that man-month figures which include the labor of the head of the household and his family are a more accurate estimation of the amount of labor inputs used by the highland farmer than those figures that consider the labor input of the head of the family alone. Table 20 shows that the number of man-months employed on the farm increases as the size of the farm increases.

Table 21 shows that the intensity of labor use on the farm does not vary significantly among various departments. This fact suggests a high degree of homogeneity among the peasants of the Guatemalan highlands with respect to the use of labor in farm activities.

Table 22 shows that the input of man-days by the operator does not vary significantly within given size groups, irrespective of whether he hires help or not. The intensity of labor use per hectare decreases dramatically as the area cultivated increases.

Usually, one day of the week was spent at the local market. If the aldea was a part of a large community with regional drawing power, many spent time at those markets as well, whether or not they carried anything to sell, because marketing is a social as well as an economic process with the Indian.

Farms were classified into three groups according to area cultivated, and within each category corn yields per hectare, average man days allocated to corn cultivation, and the yields per man day were calculated separately for farms that hired labor and those that did not. On the farms with the largest cultivated area, there was little difference between the two groups (Table 22). The yield per hectare of corn was about 50 percent greater on the medium-sized farms that hired help compared to farms in that same interval that did not hire help. In the smallest area cultivated class, the differences in yield per hectare were even greater.

These differences are most suggestive, indicating that farmers who hire labor also buy other productive inputs and/or make a more efficient use of the resources at hand. In order to estimate factor productivity among farmers that do not hire labor and among those that do hire labor, a production function for each category was

Table 21.

Average Man-Month[a] of Labor of the Operator and Other Family Workers in Production of Principal Crops by Departments

Department	Average Hectares per Farm	Average Man-Months Employed[b]	Average Man-Months Employed[c]
Chimaltenango	1.41	2.81	4.80
Totonicapán	0.64	1.74	4.13
Quezaltenango	2.06	1.71	3.37
Quiché	1.00	1.85	3.90
Sololá	1.11	1.96	4.00
San Marcos	2.46	3.02	7.29
Huehuetenango	1.74	2.16	5.23
Total	1.49	2.17	4.67

[a] One man-month is defined to consist of the labor input of a male adult for 26 days, each day being nine hours' duration.

[b] Employment period includes time in land preparation, cultivation, harvest, and threshing. These figures are for the labor provided by the head of the family only.

[c] These figures include the labor of the head of the household and his family.

Table 22.

Milpa Productivity (Maize) With and Without Hired Labor[a]

Area Cultivated	Farms	Average Quintals Per Hectare	Average Man-Days Per Hectare	Average Quintals Per Man-Day
Over 2 Ha.				
With hired help	18	16.7	37.4	0.45
Without hired help	10	18.8	35.7	0.50
1 to 2 Ha.				
With hired help	10	26.9	63.3	0.42
Without hired help	26	18.2	67.4	0.27
Under 1 Ha.				
With hired help	4	27.6	72.0	0.38
Without hired help	32	14.6	80.5	0.16

[a] Calculations based on a random sample of one-third of the questionnaires.

calculated. As a regression equation a function which is linear in the logarithms was used. Production functions of the Cobb-Douglas type belong to this class of functions. The estimated production functions are:

$$Y = 91 \; L^{.08} \, C^{.77}$$ Farmers that do not hire labor

$$Y = 110 \; L^{.19} \, C^{.71}$$ Farmers that hire labor

where Y refers to total agricultural output measured in dollars; L refers to labor use on the farm by the head of the household and his family measured in man-months; and C refers to cultivated land measured in hectares. Table 23 summarizes the statistical results.

The average percentage of the variation in the dependent variable which is associated with the independent variables is given by the coefficient of multiple determination. These coefficients are a measure of the goodness of fit of the estimated regression equation. It is desirable that the coefficients of multiple determination be as close to unity as possible. Coefficients of determination of 0.62 and 0.67 indicate, we believe, that our fitted function adequately characterize the data. The coefficients of determination indicate that for the farmers that do not hire labor, 62 percent of the variation in the value of agricultural output is "explained" by the factors of production considered in the analysis. The corresponding figure for farmers who hire labor is 67 percent.

The regression coefficients of the function we fitted to our data are elasticities, i.e., they indicate the percentage changes in output which on the average will result from a one percent change in the input of the factors of production. For example, an increase of one percent in the amount of land for farmers that do not use hired labor is associated, on the average, with an increase in agricultural output of 0.77 percent. On the other hand, an increase of one percent in labor will result in an increase of only 0.08 percent.

The values of the estimated elasticities indicate that increases in family labor inputs will result in higher increases in output for farmers that hire labor than for those who do not. But on the other hand, increases in land inputs will result in higher increases in output for farmers that do not hire labor than for those who do hire labor. For both kinds of farmers land seems to be the most important factor of production, but land is relatively more important for farmers who only use family labor than for those who hire labor inputs in addition to the labor force provided by the family.

Each of the elasticities calculated is less than one, hence indicating diminishing marginal returns for each factor of production. In other words, a one percent increase in input of land or labor will result in an increase in the value of production of less than one percent, but in addition the return per unit of a given resource will decline as more of it is used, holding the others constant.

Table 23.

Regression Coefficients, Average and Marginal Productivities and Related Statistics of the Estimated Production Functions of Farmers Who Hire Labor and of Those Who Do Not Hire Labor

Item	Type of Farming	
	Not Hiring[a] Labor	Hiring Labor[b]
Value of Elasticities:*		
Labor	.08	.19
Land	.77	.71
Sum of Elasticities	.85	.90
Partial Correlation Coefficients		
Labor	.08	.22
Land	.60	.65
Multiple Correlation Coefficients	.79	.82
Coefficients of Determination	.62	.67
Average Products at Resource Means:		
Labor ($/Man-Month)	27.60	47.90
Land ($/Ha.)	111.70	135.30
Marginal Products at Resource Means:		
Labor ($/Man-Month)	2.20	9.20
Land ($/Ha.)	86.00	96.00
Average Value of Variable Capital	71.38	157.02
Average Value of Agricultural Production at Resource Means	134.00	251.00

*All elasticities are significant at 5% and 1% levels, except the one for farmers that do not hire labor which is significant at 10% level. By the F ratio test the null hypothesis that all regression coefficients are equal to zero was rejected at 5% and 1% levels.

[a] The number of farmers in this category is 198.

[b] The number of farmers in this category is 131.

The sum of the elasticities indicates that if, as an average, land and labor are increased by one percent the value of the agricultural output is increased by only .85 percent for farmers that do not hire labor and by .90 percent for farmers that hire labor.

Production functions of the Cobb-Douglas type permit us to observe the phenomenon of returns to scale. The sum of the estimated input coefficients is taken as an indication of the returns to scale. If this sum is smaller than one it indicates decreasing returns to scale; if it is equal to one it indicates constant returns to scale; and if it is larger than one there are increasing returns to scale. Our analysis suggests the presence of decreasing returns to scale among the two categories of farmers we are studying. This means that an increase in the inputs of all factors of production by a given percentage will increase agricultural output by less than this percentage.

Marginal productivities indicate the returns that might be expected, on the average, from the addition of the various resources. For example, an additional man-month of the family labor force of farmers that do not hire labor will increase the value of agricultural output by $2.20.

From Table 23 we can see that factor productivity (as indicated by the values of average and marginal productivity) of the two most important factors of production is higher for farmers that hire labor than for those who do not. Marginal productivity of labor calculated at its geometric mean is over four times higher for farmers that hire labor than for those who do not. Marginal productivity of land calculated at its geometric mean is also higher for farmers that hire labor than for those farmers that employ only family labor in the production of agricultural output.

We do not know what the factors are that cause these differences in productivity. One factor to consider is the differences in managerial skills between the two groups of farmers. Another important consideration is the quality of the land. Unfortunately we do not have information necessary to incorporate these considerations in the analysis. Nevertheless, we have information about the differences in the value of variable capital (agricultural tools, horses, etc.) between the two groups of farmers that could help to explain differences in productivity. As can be seen from Table 23, farmers that hire labor own, on the average, twice as much variable capital as those farmers that only employ the family labor force in the production of agricultural output.

Response to Innovation

Comparison of corn and wheat yields obtained with and without the use of fertilizers suggests farmers obtain a positive response to fertilization. However, the data are not adequate to indicate whether this activity is profitable (Table 24).

Table 24.

Response of Corn and Wheat to Fertilizer Applications

(Quintals per Hectare)

Department	Corn[a]		Wheat	
	With Fertilizer	Without Fertilizer	With Fertilizer	Without Fertilizer
Chimaltenango	23.3	14.7	21.4	11.6[b]
Totonicapán	24.7	13.4	22.8	12.4
Quezaltenango	24.6		22.4	
Quiché	25.5	11.9		
Sololá	18.8	13.3	27.4	9.3[c]
San Marcos	19.0	16.1[d]	25.1	22.4
Huehuetenango		14.5		
Average	22.8	13.3	24.5	12.8

[a] A total of 170 farms reported using fertilizer during the current crop year and 173 did not.

[b] Excludes one finca that reported a yield of 47.3 quintals per hectare.

[c] Excludes one finca that reported a yield of 69.8 quintals per hectare.

[d] Excludes two fincas that reported a combined yield of 42.9 quintals per hectare.

Without fertilization, the average corn yield per hectare was 13.3 quintals and with fertilization the yields of corn rose to 22.8 quintals. These figures seem to compare favorably with those given by Stadelman. He found that when the fields were fertilized with movable sheep corrals they would yield around 23 quintals per hectare and when the same lands were not fertilized their yields dropped to about 14 quintals per hectare. Apparently the communities we studied in Huehuetenango were of the latter type, because the farmers in that area used neither animal manure nor chemical fertilizer and they had yields of only 14.5 quintals.[3]

The western Highland Indian has long recognized the importance of animals in the farm system as a source of fertilizer for crops. As Stadelman pointed out, for the Huehuetenango Indians he studied, The one factor that has made it possible for the Todos Santos Indian to possess a permanent and continuous maize culture on the same lands is fertilization. [4] Stadelman describes the process by which the Indian fenced in his sheep for periods of time in small enclosures within the milpa and when the manure and urine had penetrated that piece of ground, the enclosure was moved to another part of the field. We found that sheep and chicken manures were carefully saved and applied as fertilizers. Another common practice was that of using kitchen waste to make a mulch of corn leaves and other dead vegetative matter. According to our informants, the mulch was used to control erosion and to increase fertility.

The use of chemical fertilizers is a recent innovation in the Highlands, brought about through the campaigns and help given by the cooperatives that collaborate with the Gremial Nacional de Trigueros and through the advice and help of the Servicio de Fomento de la Economía Indígena (SFEI), which is a national extension service type of program created to aid the Indian population of the country. In general, farmers were more prone to apply chemical fertilizer to their wheat fields than to corn. Part of the difference can be ascribed to the greater pressure to use chemical fertilizers in wheat production because of the campaigns of the two agencies, one of them almost exclusively interested in wheat which they hoped would come to their mills for grinding. There were other reasons, however, for the difference. Some told us the tortillas had a strange taste when made from corn that was grown on chemically fertilized soils. Others said they did not apply chemical fertilizer to potatoes because the buyers in their area refused to pay standard prices for the product; they were told that the housewives do not like the product. In Ixtiapoc, one of the villages studied in Huehuetenango, we were told "chemical fertilizers make the land sick" ("el abono enferma la tierra"). In this community natural fertilizers were not used because there were so few animals and ignorance did not allow the introduction of chemical fertilizers.

---

[3] Raymond Stadelman, "Maize Cultivation in Northwestern Guatemala," *Contributions to American Anthropology and History*, No. 33 (Washington, D.C., Carnegie Institution of Washington, 1940), p. 117. A more recent study by the Comité Interamericano de Desarrollo Agrícola (CIDA) found yields in the altiplano quite similar to ours: corn about 17.25 quintals per hectare and wheat 12 quintals per hectare where the land in the latter crop is not fertilized. *Op*. *cit*., p. 119.

[4] *Op*. *cit*., p. 164.

We have already referred to the lack of machinery; the only modern tool we could classify in this category is the hand spraying machine, which we found on 33 of the 348 farms. Twenty-six of the 33 were owned by farmers in Quezaltenango and the two communities serviced by the cooperative of San Andres Semetabaj, all three communities being located in the sphere of influence of the National Wheat Growers Association.

Transportation

Since wheat was the principal commodity produced for the market, our comments concerning transportation apply mainly to this product. We found that approximately 40 percent of those who grew wheat had their threshed grain picked up by the trucks of the National Wheat Growers Association cooperatives or by the associations organized by SFEI. Another 35 percent carried the grain to market on mule or horseback, while the remaining 25 percent depended on carriers who made their living working as human beasts of burden.

The small proportion of corn that was sold went to market also on the shoulders of these same carriers, or less frequently, it was taken to the market when the operator and his wife traveled there on the bus. For a small fee, local busses carted baggage on the roof tops and in the rear seats--the loads often outweighing the passengers themselves.

Credit

The average amount of credit obtained per farm was Q16.11, but only 10 of the 348 families [illegible] obtained individual loans in excess of Q100.00 during the agricultural year. Two obtained Q300.00 each from the National Agrarian Bank in Chimaltenango, one to plant four cuerdas of potatoes and the other to pay the salary of his mozos. Another obtained Q150.00 from the Bank in Totonicapán to plant 52.5 cuerdas of corn and 17.5 cuerdas of wheat. Three of the families in Quezaltenango obtained credit, two from private sources and the other from the bank. Two families borrowed from private sources in Quiché, paying interest at the rate of three percent per month, to finance their cottage industries; one obtained Q400.00 to finance his hat making activities and the other Q300.00 to buy yard goods or telas. There were two borrowers in Sololá; one obtained Q290.00 from a friend at five percent annual interest to pay the wages of his mozos; while the second obtained Q168.00 from a local liquor distributor to finance his own "negocio de licores." Another 55 (16 percent of the remaining 338 families) said they had used small amounts of credit for one purpose or other during the year; their borrowings averaging Q28.50 each.

One credit agency that could have an important role in the development of Highlands agriculture, the Servicio Cooperative Interamericano de Crédito Agrícola Supervisado (Cooperative Service of Supervised Agricultural Credit) was rarely encountered. The only evidence we found of its presence in the area was in the collaboration it provided the wheat producer cooperatives that had, in turn, been approved for service by the Programa de Desarrollo Agrario de la Nación (Program of Agricultural Development of the Nation). The absence of SCICAS undoubtedly is explained by the limited budget under which it operates. The other credit agency that was created to cater "exclusively to small farmers," according to its charter, is the Banco Nacional Agrario, but like SCICAS, it operates on a restricted budget and has only been able to accommodate a limited number of families in our sample population. Agricultural credit has been totally ineffective as a developmental factor among the small Highlands farmers. In view of these facts, it is not surprising to find so critical and pessimistic a commentary on the problem as was contained in the CIDA report:

> This leads to the strong presumption that the overwhelming majority of the funds available for agricultural credit is distributed among the medium and large-sized operators, who have access to and who also have the necessary financial worth to qualify for such credits....This (policy of discrimination against the small farmer) can be understood from the purely economic point of view, where capital is invested where its marginal returns are greatest; unfortunately, however, this situation aggravates the social problems resulting from unfair patterns of land tenure.[5]

Extension Services

The wheat growers' privately organized cooperatives were more influential in stimulating change than the government agencies, because of their more aggressive sales campaigns with personnel better qualified than those in the government sponsored SFEI organization and because of their superior transportation and credit facilities. SFEI has not made a great impact in the region in which it was designed to work. The enthusiasm which was responsible for its creation a few years ago has long since waned and consequently, its programs have been restricted. In general, we found the SFEI far out of step and behind the communities which the dynamic (even in a traditional society) processes of social change had altered in the decade since the agency was created. The Agricultural Extension Service of the Ministry of Agriculture was rarely encountered. Apparently its personnel and programs are concerned with parts of the agricultural economy of the country other than those represented in this study. The single extension service activity we encountered was the work of the inspectores of the Instituto Agrario Nacional (IAN) who collaborated with the private wheat producers' association, the Gremial Nacional de Trigueros, in Chimaltenango, Sololá, San Marcos, and San Andrés Semetabaj.

---

[5] CIDA, op. cit., p. 180. The same observations concerning the inadequacies of the current credit of the governmental agencies and contained in the OIT Informe, op. cit., p. 41.

Their function seemed to be to audit the books of the cooperatives that had received governmental loans. A few, in addition, promoted the organization of youth clubs among the members of the cooperatives. We found no other evidence of extension service activity among the Highland peasant farmers.

VI. SOURCES OF INCOME

There are three principal sources of income for the people of the Highlands: from farming on their own where a substantial part of the production is consumed directly; from supplementary employment within their home communities; and from earnings received as a migratory farm laborer in commercial agriculture, mostly in the coastal region.

The gross value of annual production per farm varies, as would be expected, directly with the size of farm. The average value per farm in this study was $207.55 (Table 25). Of this amount about one half was sold and the other half consumed by the family. If account is taken of the area cultivated per farm, the farms with the smaller area cultivated sell a smaller proportion of the total product than the larger (Table 26). Although the proportion of the crop sold is not correlated precisely with the area cultivated, it may be noted that for farms under 1.5 hectares in size, about two thirds of the total amount (less than 40 percent) is sold, while for farms over 1.5 hectares in size, about 56 percent of the crop is sold.

Since the Highland area is a low income farming area from which a considerable number of campesinos are known to migrate annually to the coastal region for employment as agricultural laborers, the net family incomes of the campesinos interviewed were calculated separately according to whether or not they were migrant farm laborers. Twenty percent of the respondents were migrant workers (Table 27).

The net farm income of the migrant was smaller in all departments than for the cultivators who did not migrate, although the difference was negligible in Totonicapán. For the group as a whole, the net farm income of all migrants was Q99.63, compared with Q169.90 for those not migrating. Thus, net agricultural income for non-migrants was 70 percent higher.

The farm income was also supplemented by income earned in the local communities by working as hired laborers, craftsmen or petty traders. Income so earned again was not evenly distributed. Migrant farm workers were less successful in earning extra income locally than were those who did not migrate. In the group as a whole, the average annual supplementary earnings received locally were Q27.93 for the migratory laborers and Q98.81 for those who did not migrate (Table 27).

As noted in Table 25, the average combined income earned locally by the respondents was Q239.22 per family. Again the incomes of non-migrants were much larger, more than twice as large on the average, as migrants, Q268.71 compared to Q127.56.

The source of these supplementary earnings varied greatly among communities. In the communities where raw cotton or wool was available, spinning and weaving provided a handsome supplement to farm earnings.

Table 25.

Average Value (Quetzales) per Finca of Gross Annual Production Classified According to Area Cultivated (Hectares)

Department	Under 0.5 (Ha.)	0.5-0.9	1.0-1.4	1.5-1.9	2.0-2.4	2.5 Ha. and over	Av.
Chimaltenango	37.70	118.35	197.95	248.30	242.00	498.50	208.00
Totonicapán	37.95	73.15	99.35	92.00	339.50	---	69.90
Quezaltenango	66.55	72.60	75.00	719.00	---	1190.00	382.70
Quiché	67.05	106.40	169.75	231.65	468.50	496.25	145.95
Sololá	62.90	60.75	194.90	183.75	238.60	621.05	308.35
Huehuetenango	33.55	49.30	207.00	97.00	211.35	420.65	108.05
San Marcos	---	69.00	148.20	271.50	446.80	757.50	297.20
Average	50.95	93.70	179.40	239.45	299.20	629.55	207.55

Table 26.

Value of Annual Gross Production Sold Per Finca (Quetzales)

Hectares Cultivated	Number of Fincas	Average Value Gross Annual Production Per Finca	Average Value Product Sold Per Finca	Percentage Product Sold Per Finca (By Value)
Under 0.5	83	50.95	17.30	34.0
0.5 - 0.9	92	93.70	33.40	35.7
1.0 - 1.4	53	179.40	70.00	39.0
1.5 - 1.9	46	239.45	120.35	50.3
2.0 - 2.4	27	299.20	125.30	41.9
2.5 and over	47	629.20	393.30	60.0
Total	348	207.55	102.35	49.3

Table 27.

Annual Family Incomes of Migratory and Non-Migratory Farmers in Their Home Communities
(Quetzales)

Department	Number of Farmers Interviewed	Net Agricultural Income[a]	Other Income in Community	Total Income in Community
Chimaltenango				
Migratory	31	$115.26	$ 20.88	$136.14
Non-migratory	69	215.15	50.50	265.50
Totonicapán				
Migratory	7	44.43	55.85	100.28
Non-migratory	37	45.48	154.46	199.94
Huehuetenango				
Migratory	11	61.58	23.55	85.13
Non-migratory	16	106.16	55.07	161.23
Quiché				
Migratory	7	44.37	46.89	91.26
Non-migratory	58	96.31	138.90	235.21
Sololá				
Migratory	8	120.25	33.61	153.86
Non-migratory	62	259.48	89.86	349.34
San Marcos				
Migratory	7	205.76	12.86	218.62
Non-migratory	13	269.28	58.75	328.03
Quezaltenango				
Migratory[b]	-	-	-	-
Non-migratory	22	170.00	131.86	301.86
Average of total				
Migratory	71	98.00	32.00	130.00
Non-migratory	277	166.00	97.00	263.00
Total	348	132.00	64.50	196.50

[a] Net agricultural income calculated by deducting all farming costs from the gross value of production.

[b] No cuadrilleros were interviewed in Quezaltenango in this study.

This was especially true of the villages studied in San Marcos, Quiché, and Totonicapán. Not only were the returns profitable, but these supplementary tasks also provided the basis for a permanent cottage industry (industria casera). This gave the families who participated a permanent residence and they did not become exposed to the problems that plague migrant labor families.

When employed at piece work, especially in the making of blouses or güipiles as Guatemalans say, the more skilled and industrious farm wives reported earnings that were in excess of the average farm production, or over Q207.55. Basket makers reported family earnings of Q328.00, hat makers Q120.00, and shoe makers from Q312 to Q542. No wool carding or spinning families fell into the sample so we cannot report on supplementary earnings for that product. Carpenters earned from Q158 to Q419, masons Q460, and kindred skilled workers Q787 during the year. These figures might vary, depending on the proportion of the worker's time given over to such employment.

The quarries as well as the kilns are usually owned by the wealthier landlords who rent them out to the small farmers when they have spare time for lime making. In Patzaj, for instance, we found 32 kilns owned by nine individuals, which were usually in operation only when they were rented out on a share basis--the owner of the pit and the kiln receiving one-third of the baked lime. The work, including the arduous labor involved in carrying the stone from the quarries to the kilns, was done by men and boys. The adult carriers were paid Q0.50 for the tarea of work performed. The boys were paid Q0.35 for the same task. This meant that all the stone that had been quarried at a distance of about 300 meters, would have been carried to the site of the kiln, a task that took ten or more hours to finish.

In these same communities, women used the local clay to fashion pots, bowls and water vases of various sizes. Since the shaping of the pottery was done by hand without the aid of a potter's wheel, we asked if they did not know how the wheel might be employed. "Only vaguely," their husbands replied, but they would like to have someone come to their community to help build and demonstrate the wheel. We were informed that the women who spent their spare time at such work could finish an average of five pots per week, which in turn were sold for Q0.20 to Q0.30 each depending on size, in the nearby market at Sta. Apolonia or Tecpan.

In another of the caseríos, a principal source of supplemental income was the gathering of firewood. It was sold in the same nearby markets but yielded no more than Q0.50 for a day's labor, including carrying the wood to the market.

As noted above, only one-fifth of the 348 family heads had participated the preceding agricultural year in the annual migration of harvest workers to the coffee and cotton haciendas of the Pacific

Coastal slopes. The migrant workers did not come from all departments in equal proportions. Moreover, workers seemed to come from certain caseríos within departments. For example, among those interviewed in the department of Chimaltenango, none who lived in Chimazat participated in the migrant movement; those who went were from the farms in the Comalapa and Sta. Apolonia municipios. The same was true of Sololá--the campesinos of Los Cenoas, an aldea of San Andrés Semetabaj, stayed home, while almost all among those who were interviewed from the department who went were from Santa Catarina Ixtahuacan. In this respect, our findings differ from those of Adams who found that "People from almost *all* the highland communities in which there are no large fincas participate in labor migrations."[1]

As would be expected, most migrants were from the lower income farms. The data suggest that 25 percent of the operators of fincas under one hectare in crop land participated in the migrant stream to the coast along with 22 percent of the operators of fincas with more than one but under two hectares of crop land, and only 14 percent of operators from fincas with more than two hectares of crop land.

Contrary to our expectations, there was only a slight difference in the average age of the "migrant" and the operators as a whole--40.2 years and 42.7 years, respectively. As a general rule, migratory laborers come from the younger ages, but here we found the low average farm income operating as a "push" factor causing the migrants to come from all age groups.

Considering the sample as a whole, the average migrant returned home with Q31.55 cash in his possession. This is an average of approximately Q15.00 per month for the two months' sojourn on the coast and compared to prevailing farm wages in the Highlands, it is only a little over the highest daily rate paid in the area, which we found to have been 50 cents (centavos).

When incomes from all sources are combined, the average income reported per family for non-migrants was Q263.00, for migrants Q161.55, with an overall average of Q228.05 (Table 28). It is then clear that the migrants are the poorer persons by far. Although the net cash earnings reported from such employment were only Q31.55, the workers did have some sort of subsistence while they were so employed.[2]

---

[1] Adams, *op. cit.*, p. 304 (underlining ours). (The findings of the Schmid study, "The Role of Migratory Labor in the Economic Development of Guatemala" lend support to Adam's interpretation.) Ed.

[2] This aspect of the problem has been studied in depth by Schmid, *op. cit.*

Table 28.

Comparison of Total Incomes for Migrants and Non-Migrants

Item	Non-Migrants	Migrants	Average
Number of Farmers	277	71	348
Avg. net income from agricultural production	166.00	98.00	132.00
Income from employment in community	97.00	32.00	64.50
Net income from employment as migrant farm worker	---	31.55	31.55
Average	263.00	161.55	228.05

VII. STANDARDS OF LIVING

The most striking fact about family expenditures of the persons interviewed is that 67 percent of the total was spent on food. Such a proportion is fairly representative of the expenditures of low income people all over the underdeveloped world.

An annual food budget of Q250.00 (Q144.80 purchased and Q105.20 provided by the finca), shared by a family of five, allows approximately one quetzal per member per week for food. Two-thirds of the farmers interviewed ate the same foods for breakfast, lunch and evening dinner--tortillas, a variety of tamales, frijoles, panela, salt, and coffee. Only the amount would vary--there was generally more for the evening meal. Some used a pepper or chili sauce to spice the tortillas. About one third of the men said they had rice and a vegetable in addition to the ever present tortillas. Only occasionally was the diet fortified with meat, eggs, or cheese, and then for one meal of the day only.

The houses in which the majority of the sample lived were constructed from materials most prevalent in the respective areas and the construction type conformed to the variations in climate. In our sample, we found the most frequent wall construction to be of adobe, with approximately two-thirds covered with a tile roof, and one-third with thatch roofs (paja). Very little metal roofing of any kind has made its appearance in rural Guatemala.

When the rancho has nothing but wattle and daub walls (paredes de palo y lodo) and the roofing is thatch, then the adobe is more apt to be called a choza, termed construcción de bahareque. Such housing was more prevalent in the lower reaches of the altiplano.

We found a most interesting change in housing taking place in the municipio of San Andrés Semetabaj. Here the peasants have shifted to wheat cultivation in recent years, under the influence of the cooperative in that community. The increased income is being used to replace mud-walled, thatched-roof huts (bahareques) with modern adobe and tile buildings. The effect is startling and noticeable as one approaches the community.

About one-fourth of the sample families lived in single-room ranchos, with nothing more than a bench outside to make living more comfortable than is possible when a family sleeps, cooks, eats and lives in a single-roomed enclosure.[1] Three-fourths of the families, however, lived in ranchos that had several rooms and very often there was a sweat bath (temascal) of adobe, a structure not more than seven or eight feet square,

---

[1] When the single room home was all that the family had, we generally put this into the "choza" rather than the "rancho" class. Finca and farm are used interchangeably in this study.

Table 29.

Average Annual Outlay per Family on Principal Expenditure[a] Categories
(Quetzals)

Department	No.	Medical		Clothing		Fiesta		Food[a]		Total[b]	
		Value	%	Value	%	Value	%	Value	%	Value	%
Chimaltenango	100	15.97	9.6	37.48	22.4	5.11	3.1	108.45	64.9	167.01	100.0
Sololá	70	6.89	3.6	42.54	22.2	8.69	4.6	133.17	69.6	191.29	100.0
Totonicapán	44	12.00	4.6	60.33	23.3	9.78	3.8	177.20	68.3	259.31	100.0
Quiché	65	14.73	6.7	51.23	23.4	7.44	3.4	145.54	66.5	218.95	100.0
Quezaltenango	22	30.95	6.7	107.00	23.0	28.09	6.0	299.45	64.3	465.50	100.0
San Marcos	20	10.20	4.9	63.75	30.9	3.00	1.5	129.55	62.7	206.50	100.0
Huehuetenango	27	8.15	4.5	35.07	19.2	4.07	2.2	135.00	74.1	182.29	100.0
Average	348	13.41	6.2	49.70	23.0	8.11	3.8	144.48	67.0	215.70	100.0

[a] These estimates of food expenditures are undoubtedly only gross estimates; they are judged to have values principally as indicative of the proportions spent on different items and to suggest the general dimension of minimum requirements which families try to meet.

[b] Food expenditures includes value of farm produced foods consumed in family.

with a single opening about three feet high. The Mayan name for the sweat bath was chul or tul. Some of the more affluent establishments had granaries, although this was the exception and not the rule.

In both the rancho and choza the floor was of dirt, packed hard (apelmazada) by constant use and sweeping. Most of the dwellings had no openings other than the doorway; only the better ones had window openings. There were no glazed window panes, only shutters and not always these.

When the kitchen was in the one-room choza or rancho, cooking was done over an open hearth fire (fogón) built into one corner. We found that only 21 of the 348 homes studied had a chimney; a kerosene stove was even more of a rarity, and we found only five of these. The rest of the houses had nothing more than chimneyless open fires (Table 30).

We found that 74 percent of the homes were lit by kerosene and less than a quarter of the families dependent upon ocote and candles. Tax, in his study in the area 30 years earlier, found most families who lived in the village of Panajachel burned sticks of pitch pine (ocote) to light their homes.

Water for household use for most families came from a nearby stream or spring. Approximately a third got their water from wells or cisterns (pila) which were usually installed in the villages. Very few had wells of their own. The majority of the homes (87 percent) had no privies or sanitary facilities of any kind.

From all that has been said before, it is apparent that we should not find so significant a communication media as the newspaper among the families. Only 24 families in the sample said they did receive them (Table 31). Twice as many (47) had radios.

Less than one in ten of the heads of households said they were identified with either local government or church functions in any official capacity. Anthropological descriptions of community life among the Maya had led us to anticipate that the "community service" responsibilities of the individual would take a significant portion of his time. Sol Tax, for example, estimated that community work occupied more of the "usable time" of the individual in Panajachel than did either marketing or working for others and most of the time was consumed serving as local government and church functionaries.[2] Charles Wagley, likewise, gives us a detailed description of the public services performed by the naturales of Huehuetenango, where "The political and church organization of Chimaltenango is an adjustment between their traditional Spanish-Indian village organization and the statutory requirements of the modern Guatemalan state." Custom and duty, he says, call all men for several years of service in the ranks of the local government

---

[2] Sol Tax, op. cit., pp. 86-88.

Table 30.

Some Selected Items of Family Levels of Living

Department	Total Number of Families	Number of Rooms		Kitchen Facilities			Windows		Roof Construction		
		One all purpose	More than one	Open Hearth and Chimney	Open Hearth No Chimney	Kerosene Stove	Yes	No	Tile	Wood	Palm Thatch
Chimaltenango	100	25	75	5	92	3	32	68	40	-	60
Sololá	70	21	49	5	65	-	27	43	48	1	21
Totonicapán	44	4	40	4	40	-	17	27	29	15	-
Quiché	65	12	53	3	61	1	16	49	58	1	6
Quezaltenango	22	2	20	3	18	1	8	14	20	-	2
San Marcos	20	5	15	-	20	-	7	13	10	1	9
Huehuetenango	27	12	15	1	26	-	5	22	20	3	4
Total	348	81	267	21	322	5	112	236	225	21	102
Percent		23.3	76.7	6.0	92.5	1.5	32.2	67.8	64.7	6.0	29.3

Table 30.

(Continuation)

Department	Floor Construction		Lighting Facilities			Latrine		Source of Water Supply		
	Dirt	Other	Elec-tricity	Kero-sene	Candle	Yes	No	Stream or Ditch	Spring	Well or Pila
	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
Chimaltenango	96	4	-	89	11	9	91	14	69	17
Sololá	65	5	4	50	16	11	59	11	7	52
Totonicapán	43	1	-	39	5	1	43	5	27	12
Quiché	62	3	-	44	21	6	59	13	40	12
Quezaltenango	17	5	3	6	13	16	6	-	2	20
San Marcos	20	-	-	18	2	2	18	1	3	16
Huehuetenango	27	-	-	12	15	-	27	6	16	5
Total	330	18	7	258	83	45	303	50	164	134
Percent	94.8	5.2	2.0	74.1	23.9	12.9	87.1	14.4	47.1	38.5

Table 31.

Some Measures of Communications Facilities and Community and Church Responsibilities of Family Heads

Department	Newspaper		Radio		Civic Position		Church Office	
	Yes	No	Yes	No	Yes	No	Yes	No
Chimaltenango	7	93	5	95	11	89	17	83
Sololá	5	65	12	58	6	64	6	64
Totonicapán	1	43	3	41	4	40	2	42
Quiché	4	61	8	57	-	65	4	61
Quezaltenango	4	18	14	8	2	20	1	21
San Marcos	2	18	5	15	2	18	-	20
Huehuetenango	1	26	-	27	3	24	-	27
Total	24	324	47	301	28	320	30	318

or the church. In the former, at one time or other, most men served in the position of highest rank, alcalde auxiliar, or at lesser levels as regidores, mayores, and alguaciles--the latter referring to boys of seven to fourteen years of age who begin their public roles running errands and acting as general office boys. The chief offices in the church were the sacristanes, the mayordomos and finally, the excueli who correspond to alguaciles in the secular listing. Service in these positions took time and effort, and since they were non-remunerative they required great personal sacrifices in terms of earnings foregone while in "servicio."[3]

Although we did not find these customs of great importance, obviously they still exist in some Mayan communities. Evon Vogt in his most recent paper says that, due to the increase in population and no corresponding change in the number of church officials, the responsibilities of those who serve are greater than in earlier years. Likewise, he reports that in that part of the Mayan area in southern Mexico which he has studied, the number of shamans (chiman in Guatemala) is on the increase.[4]

The violent political upheavals that Guatemala has suffered in recent years and the ties which the Catholic Church has maintained with political forces that have resisted attempts at a change of the social and economic lot of the Indian population in these same years, have combined to alienate the Indian from his customary participation in governmental and church affairs. Two recent publications refer to these demoralizing influences in Indian life; one of them, by Julio Hernández Sifontes, places the blame for this trend squarely upon the Church and the government. In his discussion, he castigates all the professions for giving lip service to the cause of the downtrodden Indian peasant and on no one is he more severe than his own profession, law. The monograph from which we have cited was the thesis he presented for his degree at the San Carlos University of Guatemala in 1965.[5]

The other recent publication which points out the injustices which have demoralized Indian life in the country is the study made by the Comité Interamericano de Desarrollo Agrícola, from which we have previously quoted. Among the factors which this study emphasizes as being responsible for the present plight of the Indian population are racial discrimination which has effectively excluded him from the social and economic life of the country; continued victimizing and defrauding of the peasant at the hands of unscrupulous individuals in public and private life who have been the organizers of cooperatives, unions, and action committees on his avowed behalf; and finally the indifference and outright exclusion of the Highland Indian from governmental credit, extension, and technical aid programs.[6]

---

[3] Charles Wagley, op. cit., pp. 13-15.

[4] Ibid., p. 19.

[5] Realidad jurídica del indígena guatemalteco, Guatemala, Ministerio de Educación, 1965.

The "democratic" process of local government, ushered in with the revolution in 1945, abruptly supplanted the Indian's "elder" system of government. The Guatemalan peasant, in today's western highlands, has not yet been able to substitute gainful work for the time previously given to the discharge of his community administrative and religious obligations.

---

[6] Ministerio de Educación, op. cit., pp. 134-135.

VIII. EDUCATION

Since education is one of the avenues of advancement in underdeveloped countries, we inquired about a few basic aspects of education. One of these is the ability to speak Spanish, the language of business conduct and public affairs in Guatemala.

Among the heads of households 13.7 percent spoke only one of the Maya subfamily dialects, while 86.3 spoke Spanish in addition to a tribal dialect (Table 32). There was relatively little difference in the proportion of members of each of the four language groups who could speak Spanish, the percentage ranging from 83.3 percent among the Kanjobal to 93.5 percent among the Mam.

The linguistic ability of the wives was totally different from that of their husbands. Only 28.7 percent were able to speak Spanish, while 71.3 percent could speak only their tribal dialect. We find very little change has occurred in the degree to which Indian women are being educated today compared with those of a generation earlier. Among Indian women under age 30, for example, 84.1 percent were illiterate (Table 33) compared with 96 percent of those over 50 years of age. The difference between these two groups is a good index of the degree of cultural change that has occurred in the Highlands over the past generation. The women are only slightly less monolingual today than they were when the anthropologist, Ruth Bunzel, made a study in this same area more than 30 years earlier. She found the contrast between the Spanish-speaking abilities of the Indian men and women even greater than would be expected, as her following comment suggests:

> "My inability to handle the native language hampered my contact with women and children, for I found none spoke more than a few words of Spanish."[1]

It was among those who claimed to prefer Spanish to a tribal dialect, or who said they spoke only Spanish outside their homes, that we found the ladinoization process at work. The difference between a ladino and an Indian is not a racial one. As the expression is used in Guatemala, ladino refers to an Indian who has foregone native dress and speech in favor of European. Obviously, many in our sample were "transitional" Indians, to borrow an expression from Whetten; they were fast becoming ladinoized but still clung to some Indian traits.[2] The persistence in the use of the Mayan language suggests the Highlands Indian has resisted acculturation or ladinoization much more than the eastern Guatemalan

---

[1] Ruth Bunzel, Chichicastenango, A Guatemalan Village (Seattle: University of Washington Press, 1959), p. ix.

[2] Whetten, op. cit., pp. 75-81.

Table 32.

Languages Spoken Outside of Home by Heads of Families and Wives, by Tribal Origins

Language Group	MALE HEAD					SPOUSE				
	Only Tribal Dialect		Tribal Dialect and Spanish		Total	Only Tribal Dialect		Tribal Dialect and Spanish		Total
	No.	Percent	No.	Percent	No.	No.	Percent	No.	Percent	No.
Cakchiquel	19	14.1	116	85.9	135	95	74.8	32	25.2	127
Mam	2	6.5	29	93.5	31	26	86.7	4	13.3	30
Quiché	24	16.6	121	83.4	145	105	73.9	37	29.1	142
Kanjobal	2	16.7	10	83.3	12	2	16.7	10	83.3	12
Mixture Spanish preferably	-	-	19	-	19	-	-	9	-	9
Total	47	13.7	295	86.3	342	228	71.3	92	28.7	320

Table 33. Education Level of Male Heads of Households and Spouses

MALES

Age Group	Literate								Non-Literate	Total
	Highest Grade Attended at School						Never Attended School	Total		
	1	2	3	4	5	Subtotal				
20 - 29	4	9	8	3		24	8	32	30	62
30 - 39	3	12	7	2		24	22	46	52	98
40 - 49	2	7	3		2	14	12	26	52	78
50 - 59	1	3	3	2	1	10	10	20	46	66
60 +		1	2		1	4	1	5	34	39
Total	10	32	23	7	4	76	53	129	214	343
Percent	2.9	9.3	6.7	2.0	1.2	22.1	15.5	37.6	62.4	100

SPOUSES

Under 20		1				1		1	9	10
20 - 29	1	5	1		1	8	6	14	70	84
30 - 39	2		1		1	4	2	6	98	104
40 - 49			1	1		2	1	3	66	69
50 - 59							1	1	36	37
60 +		1				1		1	15	16
Total	3	7	3	1	2	16	10	26	294	320
Percent	0.9	2.2	0.9	0.3	0.6	4.9	3.1	8.0	92.0	100

Indian, as Adams has shown.[3]

Unfortunately, we have no figures to indicate the language capabilities of the children. We believe, however, we are justified in presuming it would have been heavily influenced by that of the mother, at least in the earlier years. Therefore, the proportion of children who reach school age with no understanding of Spanish would be large. To illustrate this point, enrollment figures for one school that happens to be in the Cakchiquel language area showed that 38 students out of a total school enrollment of 82 were enrolled in the pre-school course, universally known throughout rural Guatemala as "castellanización" (beginning Spanish). The need for pre-school instruction in the Spanish language is evident.

Of almost equal importance are the limitations of the schools and their teachers. Many offer just one grade in addition to castellanización, with a few containing two and still fewer, three grades.

We have sorted the data pertaining to education into three categories, each with a specific definition assigned for the purposes of this study. They are (a) illiteracy, (b) literacy, and (c) development education, defined as being effectively literate.

Illiteracy

In interpreting the data we obtained on illiteracy we have found it interesting to compare illiteracy rates for various age levels in our population, as well as rates for the two sexes. In the sample population, 62.5 percent of the male family heads could neither read nor write (Table 34). There was a rate of illiteracy of 53.4 percent among the boys 17 years of age and over. The difference in illiteracy between the two groups was then 9.1 percent. However, when we eliminate heads of families who were under 50 years of age from the analysis, we find the incidence of illiteracy among household heads to be 76.9 percent. Apparently, there was a significant surge of interest in educational opportunities or, perhaps a period of greater relative prosperity, sometime in the late thirties and early forties when the younger parents would have been of school age. The trend, however, did not continue at the same pace; rather, it entered a period of little change in the middle forties and did not begin to climb significantly until the late fifties, as the following paragraph demonstrates.

---

[3] Richard N. Adams, Cultural Surveys of Panama-Nicaragua-Guatemala-El Salvador-Honduras (Washington, World Health Organization, 1957), pp. 271 and 285.

Table 34.

Educational Attainment of Parents Compared With Offspring, 17 Years and Over

Category	Never Attended School				Highest Grade Achieved in School										Total
	Can Read and Write		Totally Illiterate		First		Second		Third		Fourth		Fifth or Higher		
	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent	
Family Heads	53	15.5	214	62.5	10	2.9	32	9.4	23	6.7	7	2.0	4	1.2	343
Sons	22	7.5	156	53.4	8	2.7	55	18.8	33	11.3	7	2.4	11	3.8	292
Spouses	10	3.1	294	91.9	3	0.9	7	2.2	3	0.9	1	0.3	2	0.6	320
Daughters	2	1.0	155	79.5	6	3.1	14	7.2	13	6.7	3	1.5	2	1.9	195

Data concerning the educational status of all children seven years of age and older are contained in Table 35. The data are given separately for those who were in school at the time of our interviews and those who had never attended or had discontinued.[4] The rural Highland children do not start school at as early an age as do children in urban areas. Therefore, to evaluate the incidence of illiteracy among the children, we concentrate on those in the age group 10 to 16, and classify as illiterate the following: (a) those children who were 10 years of age and had not yet been enrolled in the first grade; (b) children 10 years of age and over who started the first grade at some earlier year but had dropped out, and (c) those aged 11 and older who had progressed no further than the first grade. Using these measures to define illiteracy in the children of our sample aged 10 to 16, we find that 40 percent of the boys and 54 percent of the girls were illiterate.

Only 25 percent of the women we are speaking of here knew the Spanish language which is indispensable to school attendance. Even so, the situation seems to be improving. While 91.9 percent of the wives of family heads were illiterate, the rate for the older daughters--those aged 17 and over--was 79.3 percent and for girls in the youngest group, as we have stated before, it was 53.2 percent. While the rate of improvement in eradicating illiteracy slightly favors the male, the fact that it did decline by two-fifths among females in this past generation suggests the degree of social change that is occurring in the Highlands of Guatemala. It is possible that the increasing participation of the female population in the marketing of their handicrafts, as well as of minor farm products, has had some influence on this change.

Literacy

We define as literates all individuals who have learned to read and write Spanish. With this definition, we can recapitulate the previous data relating to the literate proportion of our sample (Table 36).

It is interesting to note that slightly more than twice as high a proportion of male heads of families had achieved literacy without the benefit of formal schooling as had male children in the age group 17 and older. We do not know whether this was due to the fact that rural schools were not as readily available to the parent group as to their sons, thus making self-education a greater necessity with the parents, or whether some other incentive might explain the difference. We notice, too, that women in all age groups appear not to have made as much progress in this respect as did the men.

---

[4] We hesitate to use the term "drop out" in the general sense in reference to the Highlands Indian children since formal education for the majority was limited to the number of grades available in the nearest neighborhood school. The majority of these had no more than one, some had two, and a lesser number three. Only children living close to the larger towns had reasonable access to full primary and, sometimes, secondary schools.

Table 35.

Educational Status of Children By Sex, Age and Highest Grade Attained

Age Group	Never Attended School	Completed Schooling								Currently Attending School								Total
		1	2	3	4	5	6	6+	Sub-total	1	2	3	4	5	6	7	Sub-total	
Male																		
7-9	48									37	8	2					47	95
10	7	1							1	9	6	1					16	24
11-14	14	4	4	5					13	18	20	23	7	1		1	70	97
15-16	13		5	7			1		13	2	3	2	4	1	1		13	39
17+	178	8	55	33	7	2	5	4	114	2	1	2			1	2	8	300
Subtotal	260	13	64	45	7	2	6	4	141	68	38	30	11	2	2	3	154	555
Female																		
7-9	45									35	4						39	84
10	12	1							1	12	10	3					25	38
11-14	35	1	3	1					5	10	16	8	1				35	75
15-16	25	1	4	2	1	1			9	1	4	1	1	1	1		9	43
17+	157	6	14	13	3		2		38	2	1	1		1	1		6	201
Subtotal	274	9	21	16	4	1	2		53	60	35	13	2	2	2		114	441
TOTAL	534	22	85	61	11	3	8	4	194	128	73	43	13	4	4	3	268	996

As far as achieving literacy through formal school attendance is concerned, we note that approximately only one-third of those who had attended school, in all categories, and then terminated for whatever reason, continued their schooling as far as the third grade. The others discontinued at the first or second grade level. With the limited data we have at our command, the significance of these facts is difficult to assess. We do not know the exact numbers whose education ended when they had "graduated" from whatever happened to be the highest grade offered by their local school. Likewise, we are not able to say how many more would have continued through the third grade had such a grade been available. Nevertheless, both the data in this section and that which follows adequately demonstrate that in the Highlands there is a developing awareness of the value of education.

Table 36.

Percentage of Literates in Various Categories of Sample Population

Category	No formal schooling but can read and write	Highest Grade Attended		
		First	Second	Third
Heads of families	15.5	2.9	9.4	6.7
Spouses	3.1	0.9	2.2	0.9
Children 17 and over:				
Males	7.5	2.7	18.8	11.3
Females	1.0	3.1	7.2	6.7
Children 10-16 who have discontinued school:				
Boys			5.6	7.5
Girls			4.5	1.9

Developmental Education

We associate developmental education with effective literacy, which, for the purpose of this study we assume to be schooling beyond third grade. Children who have finished the fourth grade appear to have gained sufficient comprehension of the learning process to be capable of becoming "effectively literate."[5] It is possible to change this situation, making various special subjects available to some of the older children who may be enrolled in the earlier grades. However, given the limited curriculum that is currently offered, we believe that developmental education cannot be considered to exist below the fourth grade level.

Only 3.2 percent of the family heads had reached such a level. As might be expected, an insignificant 0.9 percent of their spouses were effectively literate. Their older children had not done much better; 5.6 percent of the boys aged 17 years or older had reached the fourth, fifth or sixth grade, while only 2.7 percent of the girls had achieved the same levels. The percentages were higher for the 10 to 16 year age group. Ten percent of the boys in this group and 3.8 percent of the girls had once been enrolled but discontinued or were at this level at the time of our study. In this same group, we found 0.6 percent of the boys attending secondary school. None of the girls had reached that level.

We cannot emphasize too strongly that the young Latin American, whoever he may be, who attempts to enter the modern labor market in his country and has no more training than he received by attending the first, or even the second or third grade, is little more "effectively literate" than was his completely illiterate parent.[6] The latter generation, literate or not, seeking employment away from home, could find opportunities in primary industry, or manual work in the plants that process these crops. The modern economy that is developing and must continue to develop in these countries demands skilled and specialized labor for which the illiterate and semi-illiterate are not equipped. The semi-illiterate (the "ineffective literate") has practically no advantage to offer prospective employers and must compete with the totally illiterate for jobs requiring the least amount of skill.

---

[5] See George W. Hill, El estado Sucre, sus recursos humanos (Caracas: Universidad Central de Venezuela, 1961); also his El estado de la educación en la Venezuela de hoy, 1962 (Caracas: Universidad Católica Andrés Bello, June 1962); and with Manuel Gollás Q. and Gregorio Alfaro, Un área en desarrollo, sus problemas económicos y sociales, Costa Rica (San José: Instituto Universitario Centroamericano de Investigaciones Sociales y Económicas, 1964).

[6] This appears to be what Schultz had in mind when he said, "Then, too, it takes about five years to become effectively literate." Transforming Traditional Agriculture, p. 202.

We are fully aware of the limitations imposed on educational institutions in all of this region by the lack of buildings, the inadequacy of existing buildings, and the lack of trained teachers. We believe, however, that significant progress can and must be made in spite of these handicaps, even to the point where "developmental education" could be started in some of the existing schools despite their inadequacies. Certain vocational and occupational skills could be introduced by visiting teachers traveling from one school to another to offer specialized instruction throughout a district. Something beyond the ability to read must be provided to equip the younger generation for entry into the labor market that the expanding economy of this country is creating, thus enabling them to share in the advantages that literacy and education presumably make possible.

IX. SUMMARY AND CONCLUSIONS

1. The 1964 Census indicated that the Highlands contain 36 percent of the Guatemalan population, 84 percent of which is located in rural areas. During the 14 year period 1950-1964, the Highlands population increased at the rate of 2.5 percent per annum, compared with the national population growth rate of 3.1 percent per annum for the same period.

2. In a sample of 348 farm families in seven Highland departments there was an average of five members per household. Although there are no precise estimates of the relative importance of family and hired labor on these farms, it was apparent from the survey that on most of the farms the family provided most of the labor required.

Using data for average family composition and labor conversion coefficients, the average labor force for the sample farms was estimated to be 2 1/2 man equivalents, which gives a potential labor supply of some 625 man days a year. The survey suggested, however, that an average of 69 man days a year were allocated for cultivation of corn, beans and wheat which are the major crops. It would seem that even after allowing for cultivation of minor crops, raising of livestock, travel, household duties, off-farm employment, and sickness, there is a considerable amount of underemployment of the farm labor force.

3. According to the 1964 Census, the Highlands contained 27 percent of Guatemalan farm land and 47 percent of the farms. The average farm size in the Highlands was 6.1 hectares, compared with the national average of 10.7 hectares. The Census also indicated that in the Highlands 31 percent of the farm land was controlled by .2 percent of the farmers, a slightly less concentrated pattern of land distribution than for the nation as a whole where 50 percent of the farm land was controlled by .3 percent of the farmers. The extreme nature of the land distribution is further illustrated by the fact that within the Highlands 50 percent of the farms were less than 1.4 hectares.

The average farm size in the sample was three hectares, while the average cultivated area was 1.49 hectares per farm. Pasture and wood lots accounted for another 1.29 hectares.

Some 95 percent of the farmers claimed to be "owners" of all or part of the land that they farmed. The remainder were tenants who paid rent in cash or kind. A small number of farmers had rights to use land that was subject to group tenure arrangements. The interpretation to be given to the concept of ownership is ambiguous. In most cases sons acquired rights to cultivate land from their father when they married or reached maturity. Where there was more than one son, each acquired rights to separate parcels of land rather than receiving joint rights to one or more parcels. This tendency to distribute rights to specific parcels of land among individuals is likely to further increase the existing problem of fragmentation of holdings. Inheritance and purchase were the two most important means by which farmers had acquired rights to land. However, in terms of areas involved, the amount of land acquired by purchase was small, and for the most part it was a redistribution of land within the low income farming group itself.

4. The average cash costs associated with farm production were Q53 per farm, which was 25 percent of the total value of output per farm. The main cost items were hiring of labor, seed and fertilizer purchases. The average value of farm assets was Q1,370, of which land accounted for 80 percent, buildings 12 percent, and livestock and equipment the remaining 8 percent.

Only 19 percent of farmers made use of credit and for the most part, those who did used only small amounts for seasonal production expenses, business commitments, household or ceremonial expenses. The average value of credit advanced was Q16.

5. The survey indicated that 62 percent of the farmers interviewed were illiterate, and a further 16 percent who were literate had never received any formal education. It was found that 92 percent of the wives were illiterate, and another 5 percent who were literate had no formal education. At the time of the survey, 26 percent of the children older than seven years were attending school, 54 percent had not received any schooling and the remaining 20 percent had dropped out of the schooling system. In the latter group, only 2 of the 20 percent had progressed beyond third grade before dropping out; most of the remaining 18 percent dropped out after first or second grade. To a large extent this phenomenon reflected the inadequacy of the existing schooling system as much or more than unwillingness on the part of parents to send their children to school.

6. The average total value of farm output was Q208,* of which 85 percent was due to production of crops and the remainder due to livestock. The net value of farm production, after deduction of cash costs, was Q155. Thus, the average gross value of farm output per person was Q42, while the corresponding figure per man unit was approximately Q84.

Most farmers also supplemented their earnings from agriculture with non-farm employment, either by engaging in a variety of business ventures, or by obtaining agricultural or industrial employment. The average value of income derived from these sources was Q96.** Thus, the total value of income in cash and kind was Q304 or Q61 per person.

Total net income of those farmers who emigrated out of their communities for part of the year was Q161 compared with Q263 for those who obtained off-farm employment in their local community. Both the net income from agriculture and from off-farm earnings were higher for the latter group.

* See Table 26.
**See Table 28, 64.50 + 31.55)

7. To some extent the presence of a small number of farmers who obtain relatively high incomes from agricultural and/or non-agricultural employment masks the presence of a large number of farmers whose per capita output is quite low. Accordingly, the sample population has been classified according to gross value of farm output and area of land cultivated (Table 37). Clearly, there is a predominance of farms (67 percent) that cultivate less than two hectares and produce less than Q200 of agricultural produce.

Table 37.

Farms Classified by Area Cultivated and Value of Output[(a)]

Area Cultivated (Hectares)	Farm Output (Quetzals)		
	0 - 199	200 +	Total
0 - 1.99	232 (A)	42 (B)	274
2.00 +	15 (C)	59 (D)	74
Total	247	101	348

[(a)] Capital letters in each cell denote group classification that will be used in text.

Examination of some of the characteristics of each of these four groups of farmers is most suggestive (Table 38). The value of crop production was a higher proportion of total value of farm output on the higher income farms than on lower income farms. The low income groups, A and C, consumed 75 and 69 percent of the total value of farm output, compared to only 42 and 38 percent for groups B and D.

Within each income class, the farms with a smaller cultivated area have a higher value of output per hectare (both total farm area and cultivated area). It may be that the Group C farms have poor land, or that they are "on average" less capable managers than those in Group A. Within each area class higher income farms have a higher value of output per hectare. One explanation is that the higher income farmers make more use of capital inputs such as fertilizers and seeds, and adopt better management practices.

8. The survey was confined to farms of less than 45 hectares in area, of which there were 160,231 in the Highlands in 1964. With an average of five dependents per farm these farms provide a means of livelihood for some 800,000 people, or 66 percent of the rural population in the Highlands. An important characteristic of this segment

Table 38.

Selected Characteristics of Four Sub-Groups of the Sample Population

Item	A	B	C	D	Average
Land Area					
Total Farm Area	1.63	2.62	6.99	7.63	3.00
Cultivated Area	0.77	1.33	2.59	5.91	1.49
Crop Production					
Value Crops Consumed	55.26	123.23	107.54	208.66	92.02
Value Crops Sold	13.74	166.30	23.31	319.02	84.76
Total	69.00	289.53	130.85	527.68	176.78
Livestock Production					
Value Livestock Consumed	10.11	15.66	21.35	21.43	13.18
Value Livestock Sold	7.67	25.88	33.50	54.40	17.59
	17.78	41.54	54.85	75.83	30.77
Output per Hectare					
Value of Farm Output per Hectare	53.24	122.55	26.57	79.10	69.18
Value of Crop Production per Hectare Cultivated	89.61	217.69	50.52	89.29	118.64
Distribution of Farm Output					
Value Produce Consumed	65.37	138.89	128.89	230.09	105.20
Value Produce Sold	21.41	192.18	56.81	373.42	102.35
Total	86.78	331.07	185.70	603.51	207.55

of the rural population is the low land/labor ratio. The average area of farm land per person (using 1964 Census data) for this entire portion of the Highlands population was approximately .6 hectares. In the sample of 348 farms, the corresponding figure was .6 hectares per person as well, while the cultivated area per person was only .3 hectares.

In view of the fact that the rural population in the Highlands has been growing at the rate of 2 1/2 percent per annum and the fact that on these small farms there is little use of capital inputs such as fertilizer, improved seeds, and pest and disease control measures, there is reason to believe that per capita output may not rise significantly in the foreseeable future and, if anything, may fall. One important issue pertinent to agricultural policy involved here is whether increased capital inputs on these farms would provide significant increases in output, given the existing level of managerial ability of the farmers, or whether increases that are potentially attainable are conditional upon improved levels of farm management. In the latter case, the question of increasing the managerial ability of farmers attains even greater importance. It seems that the existing agricultural extension services are making only a marginal contribution to improving levels of farm management because of the small number of field staff employed relative to the number of farmers, the inadequate level of training of extension staff and the extension techniques used. In view of the low level of literacy among farmers, a successful extension program may well depend on achieving regular contact between field officers and a large number of farmers at a personal level or in groups of sufficiently small size. However, if there is a significant amount of underemployment on farms there may be little incentive to introduce labor-saving technology into the farming system.

Another important question relates to the impact of further increases in the farm labor force on per capita output in this segment of Highlands agriculture. It is not clear how additions to the farm labor force, in the absence of any change in technology or inputs of capital, would affect per capita output. However, in view of the low ratio of land to labor, it is plausible that increments to the labor force may depress average labor productivity (i.e. marginal is less than average productivity). If this is the case two important policy issues are involved in any attempt to raise per capita output. One is the question of obtaining increases in output through increased capital inputs and technological change sufficient to offset increments to the labor force, thereby raising per capita output. The other is the possibility of reducing the labor force dependent for a livelihood on these farms by providing alternate employment opportunities. Several possibilities exist here; migration to new areas of land suitable for agriculture, redistribution of existing holdings and migration out of agriculture into industrial employment.

The Land Tenure Center is a cooperative research and training program of the American Nations, the Agency for International Development and the University of Wisconsin.